APPENDIX K2

Tecolote CHRMP

MISSION BAY PARK IMPROVEMENTS PROGRAM

Tecolote Creek Wetlands
Conceptual Habitat Restoration and Monitoring Plan
San Diego, California

Prepared for:

The City of SAN DIEGO

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ACRONYMS/ABBREVIATIONS

Acronym/Abbreviation	Meaning
AA	assessment area
BMP	best management practice
CCC	California Coastal Commission
CDFW	California Department of Fish and Wildlife
City	City of San Diego
CRAM	California Rapid Assessment Method
Improvement Zone	Mission Bay Park Improvement Zone
PEP	plant establishment period
Plan	Mitigation and Monitoring Plan
Program	Improvement Zone Program
Project	Tecolote Creek Wetlands Restoration Project
RWQCB	Regional Water Quality Control Board
SDBG	San Diego Biology Guidelines
USACE	U.S. Army Corps of Engineers

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SUMMARY

This Conceptual Habitat Restoration and Monitoring Plan (Plan) for the Tecolote Creek Wetlands Restoration Project (Project) provides design parameters to create a tidal salt marsh that would improve the water quality and expand aquatic wetlands resources and wildlife habitat within Mission Bay. The Project would consist of approximately 18.66 acres of subtidal channels, mudflats, low marsh, mid marsh, high marsh, and transitional salt marsh area, and 2.53 acres of southern foredune habitat. Approximately 4.95 acres occur within the Project footprint would not be impacted and would remain in its current form. Overall, the Project encompasses an approximately 21.20-acre footprint.

The Mission Bay Park Master Plan Update identifies Tecolote Creek as one of three locations for restoration of tidal wetlands (City of San Diego 2021a). The Project is part of a Mission Bay Improvement Program that is analyzed in the Mission Bay Park Improvements Programmatic Environmental Impact Report for multiple prioritized improvement projects within the Mission Bay Improvement Zone (Improvement Zone). The overall Improvement Zone includes portions of Tecolote Creek, Cudahy Creek, and the San Diego River as it passes through the boundaries of Mission Bay Park.

The Project site is located along the eastern shoreline of Mission Bay, east of Fiesta Island along both sides of the Fiesta Island causeway, and west of East Mission Bay Drive at the Tecolote Creek outfall. The entire Project site is located within the California Coastal Commission and City of San Diego Coastal Zones.

Five existing habitats and land cover types were mapped within the wetland restoration area: open water, beach, coastal salt marsh, disturbed habitat, and developed land. Approximately 1.25 acres of beach is considered wetlands per the City of San Diego's Land Development Manual Biology Guidelines (City of San Diego 2018). Approximately 1.18 acres of coastal salt marsh is considered wetlands under the jurisdiction of the U.S. Army Corps of Engineers, Regional Water Quality Control Board, California Coastal Conservancy, and City of San Diego. Approximately 13.81 acres of open water is considered a non-wetland water under the jurisdiction of the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and California Coastal Conservancy, and approximately 1.25 acres of beach, considered a non-wetland water under the jurisdiction of the USACE, RWQCB, and California Coastal Conservancy, occurs within the wetland restoration area.

The restoration of subtidal channels, mudflats, salt marsh, transitional salt marsh, and coastal strand habitats would provide substantial functional lift and habitat value, resulting in a net increase of wetland function. Resource impacts due to wetland restoration would be mitigated on site through credit reduction for the overall Project. Therefore, the Project would be self-mitigating. The

proposed native plant communities and wildlife habitat are intended to become self-sustaining with a minimum of long-term management activities in perpetuity.

The Plan outlined herein provides guidelines for the restoration of 1.69 acres of subtidal channels, 2.48 acres of mudflat, 13.88 acres of salt marsh, 0.61 acres of transitional salt marsh, and 2.53 acres of southern foredune habitat for a total of 21.20 acres of water quality improvements, which provide increased habitat and aquatic functions and values within Mission Bay.

This Plan presents information on baseline conditions, restoration and design grading approaches, installation procedures, maintenance, monitoring, reporting, and performance standards that are necessary for successful establishment of self-sustaining wetland functions and values.

1 PROJECT DESCRIPTION

1.1 RESPONSIBLE PARTIES

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1.2 PROJECT BACKGROUND

Proposition C was approved on November 4, 2008, which amended the City of San Diego (City) Charter by adding Section 55.2. Proposition C created the Mission Bay Park Improvement Fund for projects identified within the approximately 4,387-acre Mission Bay Park Improvement Zone (Improvement Zone). The Improvement Zone includes portions of Tecolote Creek, Cudahy Creek, and the San Diego River as it passes through the boundaries of Mission Bay Park.

The Tecolote Creek Wetlands Restoration Project (Project) is a component of the Mission Bay Park Improvements Program, which is analyzed in the Mission Bay Park Improvements Programmatic Environmental Impact Report. Tecolote Creek is one of several water quality and habitat projects

that are planned within the Improvement Zone. The ultimate goal is to enhance the conditions of the Improvement Zone for the enjoyment of residents and visitors. As part of the Program Environmental Impact Report, preliminary engineering reports have been prepared for North Fiesta Island, Tecolote Creek, Cudahy Creek, shoreline restoration, habitat preservation, Mission Bay Park bike and pedestrian paths, seawall restoration, and deferred maintenance. The preliminary engineering reports provide the basis of design for the restoration projects.

The Mission Bay Park Master Plan Update identifies the Tecolote Creek wetland area (Figure 1, Project Location, and Figure 2, Project Site) as one of three locations for restoration of tidal wetlands where the ultimate wetland area should be derived by balancing water quality, flood control, aquatic restoration, and public safety (City of San Diego 2021a). A preliminary analysis of the constraints and opportunities to provide wetland treatment at Tecolote Creek was prepared by Merkel & Associates Inc. (Merkel 2003), which included the preparation of a cursory level, conceptual design for salt marsh. In March 2021, Rick Engineering prepared a preliminary engineering report for Tecolote Creek that provides updated hydraulic analysis to estimate water quality improvement performance at the proposed wetland area during storm events, and to provide engineering and design parameters; this report is included as Appendix A of Conceptual Habitat Restoration and Monitoring Plan (Plan).

The following sections of this Plan outline the restoration workplan of the Project, including the restoration of coastal tidal saltmarsh habitat (Figure 3, Conceptual Site Plan). This restoration effort supports the zonation of aquatic resources that benefit all trophic levels, from macroinvertebrate species on the low end of the food chain to diverse avian species that preferentially feed within specific habitat types. The grading design provides for a gentle transition from the wetland restoration area into adjacent restoration areas around the Project site fringe. The gentle transition would create space for the expression of mid and high salt marsh species within the Project footprint.

2 REGULATORY SETTING

Federal, state, and local agencies enforce jurisdiction over portions of proposed restoration sites of in areas immediately adjacent to restoration sites, In addition, some sites support populations of listed species thar are regulated by federal and/or state agencies. In some cases, these species are covered under the City's MSCP. Where coverage is not provided, an informal consultation would be required with the potential for permit applications and permit acquisition prior to project implementation.

2.1 FEDERAL

2.1.1 FEDERAL ENDANGERED SPECIES ACT

The federal Endangered Species Act (FESA) of 1973 (16 USC 1531 et seq.), as amended, is administered by the U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration, and National Marine Fisheries Service. This legislation is intended to provide a means to conserve the ecosystems upon which endangered and threatened species depend and provide programs for the conservation of those species, thus preventing extinction of plants and wildlife. Under provisions of Section 9(a)(1)(B) of FESA, it is unlawful to "take" any listed species. "Take" is defined in Section 3(19) of FESA as, "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." FESA provides for designation of critical habitat for species designated as endangered, defined in Section 3(5)(A) as specific areas within the geographical range occupied by a species where physical or biological features "essential to the conservation of the species" are found and "which may require special management considerations or protection." Critical Habitat may also include areas outside the current geographical area occupied by the species that are nonetheless "essential for the conservation of the species."

The FESA allows for the issuance of "incidental take" permits for listed species under Section 7, which is generally available for components that also require other federal agency permits or other approvals, and under Section 10, which provides for the approval of habitat conservation plans on private property without any other federal agency involvement. Incidental take is defined as "take that results from, but is not the purpose of, carrying out an otherwise lawful activity" (50 CFR, Parts 17.22 and 17.32).

2.1.2 MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act (MBTA) prohibits the take of any migratory bird or any part, nest, or eggs of any such bird. Under the MBTA, "take" is defined as pursue, hunt, shoot, wound, kill trap,

capture, or collect, or any attempt to carry out these activities (16 USC 703 et seq.). The number of bird species covered by the MBTA is extensive; the species are listed in Title 50 of the Code of Federal Regulations, Part 10.13. The regulatory definition of "migratory bird" is broad and includes any mutation or hybrid of a listed species, and also includes any part, egg, or nest of such birds (50 CFR 10.12). The MBTA, which is enforced by USFWS, makes it unlawful "by any means or in any manner, to pursue, hunt, take, capture, [or] kill" any migratory bird or attempt such actions, except as permitted by regulation. The applicable regulations prohibit the take, possession, import, export, transport, sale, purchase, barter, or offering of these activities, except under a valid permit or as permitted in the implementing regulations (50 CFR 21.11). Additionally, Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds," requires that any component with federal involvement address impacts of federal actions on migratory birds with the purpose of promoting conservation of migratory bird populations (66 FR 3853–3856). The Executive Order requires federal agencies to work with USFWS to develop a memorandum of understanding. USFWS reviews actions that might affect these species.

Currently, birds are considered to be nesting under the MBTA only when there are viable eggs or chicks, which are dependent on the nest.

Local implementation of the MBTA typically involves a qualified biologist conducting a nesting bird survey prior to construction activities between February 1 and September 15. Such surveys are required in all construction areas where natural or ornamental trees, shrubs, and ground cover may provide suitable nesting habitat for protected species. A nest avoidance buffer, as determined by the qualified biologist, would be established and serve to protect active nests from direct and indirect disturbance until breeding activities have been completed.

2.1.3 COASTAL ZONE MANAGEMENT ACT OF 1972

The Coastal Zone Management Act of 1972 (16 USC Sections 1451–1464, Chapter 33) is administered by the National Oceanic and Atmospheric Administration's Office of Ocean and Resource Management and was established as a national policy to preserve, protect, develop, and – where possible – enhance or restore the coastal zone in the United States. The federal consistency provision, Section 307 of the Coastal Zone Management Act, encourages states to join the Coastal Zone Management Program, which takes a comprehensive approach to coastal resource management by balancing the competing and/or conflicting demands of coastal resource use, economic development, and conservation and allows states to issue the applicable permits. California has a federally approved Coastal Zone Management Program, and the Coastal Zone Management Act is administered by the California Coastal Commission (CCC). Therefore, the Coastal

Zone Management Program and permit requirements are discussed further in the California Coastal Act section below.

2.2 STATE

2.2.1 CALIFORNIA ENVIRONMENTAL QUALITY ACT

The California Environmental Quality Act (CEQA) requires identification of a project's potentially significant impacts on biological resources and feasible restoration measures and alternatives that could avoid or reduce significant impacts. CEQA Guidelines Section 15380(b)(1) defines endangered animals or plants as species or subspecies whose "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors" (14 CCR 15000 et seq.). A rare animal or plant is defined in CEQA Guidelines Section 15380(b)(2) as a species that, although not presently threatened with extinction, exists "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or … [t]he species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the federal Endangered Species Act." Additionally, an animal or plant may be presumed to be endangered, rare, or threatened if it meets the criteria for listing, as defined further in CEQA Guidelines Section 15380(c). CEQA also requires identification of a project's potentially significant impacts on riparian habitats (such as wetlands, bays, estuaries, and marshes) and other sensitive natural communities, including habitats occupied by endangered, rare, and threatened species.

2.2.2 CALIFORNIA COASTAL ACT

The CCC was established by voter initiative in 1972 and was made permanent by the California Legislature through the adoption of the California Coastal Act of 1976 (CCA; California Public Resources Code Section 30000 et seq.). The CCC, in partnership with coastal cities and counties, plans and regulates the use of land and water in the coastal zone. Under the CCA, cities and counties are responsible for preparing local coastal programs in order to obtain authority to issue coastal development permits for projects within their jurisdiction. Local coastal programs consist of land use plans, zoning ordinances, zoning maps, and other implementing actions that conform to the policies of the CCA. Until an agency has a fully certified local coastal program, the CCC is responsible for issuing coastal development permits.

Under the CCA, Section 30107.5, environmentally sensitive habitat areas are areas within the coastal zone that are "designated based on the presence of rare habitats or areas that support populations of rare, sensitive, or especially valuable species or habitats." In addition, the CCC regulates impacts

to coastal wetlands defined in Section 30121 of the CCA as, "lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens." The CCA requires that most development avoid and buffer coastal wetland resources in accordance with Sections 301231 and 30233, including limiting the filling of wetlands to certain allowable uses.

The Biological Study Area (BSA) is located entirely within the coastal zone.

2.2.3 CALIFORNIA ENDANGERED SPECIES ACT

The California Department of Fish and Wildlife (CDFW) administers the California Endangered Species Act (CESA; California Fish and Game Code [CFGC], Section 2050 et seq.), which prohibits the "take" of plant and animal species designated by the Fish and Game Commission as endangered or threatened in the State of California. Under CESA Section 86, "take" is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA Section 2053 stipulates that state agencies may not approve projects that would "jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy."

CESA Sections 2080 through 2085 address the taking of threatened, endangered, or candidate species by stating, "No person shall import into this state, export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the Commission determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided in this chapter, the Native Plant Protection Act (CFGC, Sections 1900–1913), or the California Desert Native Plants Act (Food and Agricultural Code, Section 80001)." Take authorization for otherwise lawful activities may be obtained from CDFW under Section 2081 of the CFGC.

2.2.4 CALIFORNIA FISH AND GAME CODE

According to Sections 3511, 4700, 5050, and 5515 of the CFGC, which regulate birds, mammals, reptiles and amphibian, and fish, respectively, a "fully protected" species may not be taken or possessed without a permit from the CFGC, and, with few exceptions, take of these species is prohibited.

According to Section 3503, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.

Section 3503.5 states that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto. Section 3513 states that it is unlawful to take or possess any migratory nongame bird as designated in the MBTA.

The Native Plant Protection Act of 1977 (CFGC, Section 1900 et seq.) gives CDFW authority to designate state endangered, threatened, and rare plants, and provides specific protection measures for identified populations.

2.3 LOCAL REGULATIONS AND CONSERVATION PLANS

2.3.1 SAN DIEGO MULTIPLE SPECIES CONSERVATION PROGRAM

The City is a participant in the San Diego Multiple Species Conservation Program (MSCP), a comprehensive, regional long-term habitat conservation program designed to provide permit issuance authority for take of covered species to the local regulatory agencies. The MSCP addresses habitat and species conservation within approximately 900 square miles in the southwestern portion of San Diego County. It serves as an approved habitat conservation plan pursuant to an approved Natural Communities Conservation Plan in accordance with the state Natural Communities Conservation Planning Act.

The MSCP establishes a preserve system designed to conserve large blocks of interconnected habitat having high biological value that are delineated in Multi-Habitat Planning Areas (MHPAs). The City MHPA is a “hard line” preserve developed by the City in cooperation with the wildlife agencies, property owners, developers, and environmental groups. The MHPA identifies biological core resource areas and corridors targeted for conservation, in which only limited development may occur (City of San Diego 1997).

The MSCP identifies 85 plants and animals to be “covered” under the plan (termed Covered Species). Many of these Covered Species are subject to one or more protective designations under state and/or federal law and some are endemic to San Diego. The MSCP seeks to provide adequate habitat in the preserve to maintain ecosystem functions and persistence of extant populations of the 85 Covered Species while also allowing participating landowners “take” of Covered Species on lands located outside of the preserve. The purpose of the MSCP is to address species conservation on a regional level and thereby avoid component-by-component biological restoration, which tends to fragment habitat.

2.3.2 CITY OF SAN DIEGO MSCP SUBAREA PLAN

The City of San Diego MSCP Subarea Plan (Subarea Plan) (City of San Diego 1997) encompasses 206,124 acres within the MSCP Subregional Plan area. The proposed study area is located within the Urban areas of the Subarea Plan. The Urban habitat areas within the MHPA include existing designated open space such as Mission Bay, Tecolote Canyon, Marian Bear Memorial Park, Rose Canyon, San Diego River, the southern slopes along Mission Valley, Carroll and Rattlesnake Canyons, Florida Canyon, Chollas Creek, and a variety of smaller canyon systems. The Southern area includes Otay Mesa, Otay River Valley, and Tijuana Estuary and Tijuana River Valley. The Eastern area includes East Elliott and Mission Trails Regional Park.

The Subarea Plan is characterized by urban land uses with approximately three-quarters either built out or retained as open space/park system. Portions of the BSA are located within and adjacent to MHPA boundaries (City of San Diego 1997, Figure 33, City of San Diego MSCP Subarea and MHPA). The MHPA is considered an urban preserve that is constrained by existing or approved development and is comprised of habitat linkages connecting several large core areas of habitat. The criteria used to define core and linkage areas involves maintaining ecosystem function and processes, including large animal movement. Each core area is connected to other core areas or to habitat areas outside of the MSCP either through common boundaries or through linkages. Core areas have multiple connections to help ensure that the balance in the ecosystem would be maintained (City of San Diego 1997). Critical habitat linkages between core areas are conserved in a functional manner with a minimum of 75% of the habitat within identified linkages conserved (City of San Diego 1997).

2.3.3 CITY OF SAN DIEGO LAND DEVELOPMENT CODE – ENVIRONMENTALLY SENSITIVE LANDS REGULATION AND BIOLOGY GUIDELINES

The City of San Diego Development Services Department (DSD) developed the City of San Diego Biology Guidelines (SDBG) presented in the Land Development Manual "to aid in the implementation and interpretation of ESL [Environmentally Sensitive Lands] Regulations, San Diego LDC [Land Development Code], Chapter 14, Division 1, Section 143.0101 et seq., and the Open Space Residential (OR-1-2) Zone, Chapter 13, Division 2, Section 131.0201 et seq." (City of San Diego 2018a). The guidelines also provide standards for the determination of impact and mitigation under CEQA and the CCA. Sensitive biological resources, as defined by ESL Regulations, include lands within the MHPA, as discussed in Section 1.3.3 of this report, as well as other lands outside of the MHPA that contain wetlands; vegetation communities classifiable as Tier I, II, IIIA, or IIIB; habitat for rare, endangered, or threatened species; or narrow endemic species. The San Diego Municipal Code ranks upland habitat values by rarity and sensitivity. The most sensitive habitats are Tier I, and the

least sensitive are Tier IV. The varying restoration ratios and requirements that restoration be either in-tier or in-kind are based on the sensitivity of the habitat being affected.

The City's definition of wetlands is broader than the definition applied by the U.S. Army Corps of Engineers (USACE). According to the SDBG (City of San Diego 2018a), City wetlands include areas characterized by one or more of the following conditions:

1. All areas persistently or periodically containing naturally occurring wetland vegetation communities characteristically dominated by hydrophytic vegetation, including but not limited to salt marsh, brackish marsh, freshwater marsh, riparian forest, oak riparian forest, riparian woodlands, riparian scrub, and vernal pools;
    - Areas that have hydric soils or wetland hydrology and lack naturally occurring wetland vegetation communities because human activities have removed the historic wetland vegetation or catastrophic or recurring natural events or processes have acted to preclude the establishment of wetland vegetation as in the case of salt pannes and mudflats;
    - Areas lacking wetland vegetation communities, hydric soils, and wetland hydrology due to non-permitted filling of previously existing wetlands; or
    - Areas mapped as wetlands on Map C-713 as shown in Chapter 13, Article 2, Division 6 (Sensitive Coastal Overlay Zone).

Per the SDBG, areas that contain wetland vegetation, soils, or hydrology created by human activities in historically non-wetland areas do not qualify as wetlands under the City's definition unless they have been delineated as wetlands by the USACE and/or CDFW (City of San Diego 2018a). Artificially created wetlands consist of the following: wetland vegetation growing in brow ditches and similar drainage structures outside of natural drainage courses; wastewater treatment ponds; stock watering, desiltation, and retention basins; water ponding on landfill surfaces and road ruts created by vehicles; and artificially irrigated areas that would revert to uplands if the irrigation ceased. Previously dredged tidal areas, such as Mission Bay, should be considered wetlands under ESL Regulations (City of San Diego 2018a).

Guidelines that supplement the development regulation requirements described in this section are provided in the SDBG (City of San Diego 2018a). The Program is located entirely within the Coastal Overlay Zone (COZ), and therefore wetlands within the BSA would require adherence to the COZ wetland buffer regulations (City of San Diego 2018a). According to the SDBG, a wetland buffer is an area surrounding a wetland that helps protect the function and value of the adjacent wetland by reducing physical disturbance, provides a transition zone where one habitat phases into another,

and acts to slow flood waters for flood and erosion control, sediment filtration, water purification, and groundwater recharge (City of San Diego 2018a). Within the COZ, wetland buffers should be provided at a minimum of 100 feet wide adjacent to all identified wetlands within the COZ. The width of the buffer may be either increased or decreased as determined on a case-by-case basis, in consultation with the CDFW, USFWS, and the USACE The width of the buffer is determined by factors such as type and size of development, sensitivity of the wetland resource to edge effects, topography, and the need for upland transition (City of San Diego 2018a). Per ESL Regulations, uses permitted in wetlands within the COZ are limited to aquaculture, wetlands-related scientific research and wetlands-related educational uses; wetland restoration components where the primary purpose is restoration of the habitat; and incidental public service components, where it has been demonstrated that there is no feasible less environmentally damaging location or alternative, and where restoration measures have been provided to minimize adverse environmental effects. Also per ESL Regulations, permitted uses in wetland buffer areas shall be limited to public access paths, fences, restoration and enhancement activities, and other improvements necessary to protect wetlands. ESL Regulations also lists permitted uses and developmental regulations for steep hillsides, coastal bluffs, coastal beaches, and special flood hazard areas.

2.3.4 CITY OF SAN DIEGO GENERAL PLAN

The proposed component is located in the City of San Diego and therefore is subject to the goals and policies in the City's General Plan. The General Plan was adopted in March 2008, and was most recently amended in July 2024. The General Plan provides policy guidance to balance the needs of a growing city while enhancing the quality of life for current and future San Diegans. It includes the City of Villages strategy which outlines how the City can enhance its many communities and neighborhoods as growth occurs over time. The General Plan contains 11 elements that provide a comprehensive "blueprint" for the City's growth over the next 20 plus years. As shown in the General Plan land use map (City of San Diego 2024a, Figure LU-2), the component site is located in an area that is designated as Park, Open Space, and Recreation.

2.3.5 MISSION BAY PARK MASTER PLAN

The component site falls within the boundaries of Mission Bay Park—a regional park that serves the residents of and visitors to San Diego. The MBPMP was adopted on August 2, 1994, and was most recently updated on November 23, 2021 (City of San Diego 2021. The MBPMP serves as the local coastal program for this area of the City. The proposed component is subject to the goals and recommendations established in the MBPMP, and the proposed component would be incorporated into the MBPMP as an amendment. The MBPMP recommends that the proposed study area should serve regional recreation needs, including guest housing (recreational vehicles and other low cost

camping facilities); improve the park's water quality, including creating additional wetlands; facilitate hydrologic improvements to safeguard the viability of marsh areas; provide a waterfront trail, viewing areas, and other passive recreational features to enhance public use of the component area; ensure leaseholds support the Mission Bay recreation use; improve access to recreational uses; and improve play areas for regional recreational needs.

2.3.6 THE "WHITEBOOK"

The City of San Diego published *The "Whitebook" Standard Specifications for Public Works Construction* (City of San Diego 2021b), which includes many standard practices that result in minimization of impacts to biological resources, including biological monitoring, materials suitability, safe construction methods, avian nest protection, tree protection, landscape standards, and stormwater protection measures. The "Whitebook" prescribed measures and standards are incorporated into the Program as Environmental Protocols.

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3 RESTORATION PROJECT

The following are overall goals for the Mission Bay Park Improvements Program, which are based, in part, on the goals of Section 55.2 of Article V of the City of San Diego Charter:

1. Restoration of navigable waters within Mission Bay Park and elimination of navigational hazards. When depth conditions no longer support and ensure safe navigation, those areas that pose a danger or impede the passage of watercraft would be dredged in accordance with the Mission Bay Baseline Chart.
2. Wetland expansion and water quality improvements and the protection and expansion of eelgrass beds as identified in the Mission Bay Park Master Plan.
3. Restoration of shoreline treatments within the Mission Bay Park Improvement Zone including restoration of beach sand and stabilization of erosion control features.
4. Expansion of endangered or threatened species preserves and upland habitats on North Fiesta Island and along the levee of the San Diego River floodway as identified in the Mission Bay Park Master Plan.
5. Completion of bicycle and pedestrian paths and bridges as identified in the Mission Bay Park Master Plan, installation of sustainable lighting in the Mission Bay Park Improvement Zone, installation of signage and landscaping at points of entry to Mission Bay Park and the South Shores, and the repair, resurfacing and restriping of parking lots within the Mission Bay Park Improvement Zone.
6. Deferred maintenance that are also Capital Improvements hereunder on existing assets within the Mission Bay Improvement Zone as may be recommended by the Mission Bay Park Improvement Fund

The Project is designed with the primary goal of complying with the Mission Bay Park Master Plan water quality improvements initiative. The Mission Bay Park Master Plan includes the following key recommendation for water quality (City of San Diego 2021a, p. 4):

> It is broadly recognized that the Park's economic and recreational future depends on the quality of the Bay's water. In response to fluctuating quality of the Bay waters, this Plan proposes a comprehensive set of measures involving state-of-the-art biological, mechanical, public education and recreation management programs. Biological measures include the establishment of salt-water marshes that can naturally filter pollutants as they enter the Bay through the creeks that drain the Bay's watershed.

More precisely, the objectives for the Project are as follows:

- Re-establish multi-gradient salt marsh to include subtidal channels, mudflat, low-level (low) salt marsh, mid-level (mid) salt marsh, and high-level (high) salt marsh.
- Re-establish a tidal prism of diverse, self-sustaining native salt marsh communities.
- Shorten the tidal pathway through Fiesta Island and facilitate increased tidal exchange between Fiesta Bay and the open waters of Fiesta Island.
- Provide increased habitat functions and aquatic functions that benefit all trophic levels, from macroinvertebrate species on the low end of the food chain to diverse avian species that preferentially feed within specific upland habitat types.
- Provide appropriate upland erosion control on all upland areas surrounding the Project site.
- Prevent any impacts to threatened and endangered native wildlife species through appropriate minimization measures.
- Restore self-sustaining native salt marsh communities in a wetland configuration that reduces the need for maintenance except at localized infrastructure features (e.g., the outfall of Tecolote Creek) while creating sustainable storm drain conveyance through the wetland habitat to the open water area of Mission Bay.

3.1 TARGET HABITAT TYPES TO BE ESTABLISHED

The Project would create 13.88 acres of tidal salt marsh habitat, including gradated areas of low, mid, and high marsh vegetation communities; 2.48 acres of mudflat; 1.69 acres of subtidal channels; 0.61 acres of transitional salt marsh habitat; and 2.53 acres of southern foredune habitat. Plant palettes and installation details are presented in Section 6.3.5, Planting Plan, for each vegetation community.

3.2 PROJECT IMPACTS TO AQUATIC RESOURCES

The purpose of the Project is to restore approximately 21.19 acres of wetland by modifying existing open water, beach, coastal salt marsh, disturbed, and developed areas within the Project site. Modifications would include creating tidal salt marsh, subtidal channels, mudflats, transitional salt marsh, and southern foredune habitat. Potential adverse effects, such as temporal loss, type conversion, and risk/uncertainty would be replaced and overall ecological function within Mission Bay Park would be improved, resulting in no-net-loss of aquatic functions. The resulting habitat area would combine open water channels with various salt marsh habitat types in a matrix that would produce higher productivity than is currently achieved by open water and upland habitats alone; it would also provide water quality benefits.

3.2.1 JURISDICTIONAL DELINEATION

A jurisdictional delineation was conducted within the approximately 4,387-acre Improvement Zone. A desktop analysis was performed, followed by field analysis at 21 sampling sites. The sites were selected based on vegetation communities and aquatic resources provided from available GIS data and were chosen to coincide with the projects outlined for the Improvement Zone. The sampling sites were surveyed to determine the presence or absence of wetland field indicators and jurisdictional resources within the Improvement Zone (SES 2025).

3.2.1.1 Wetland Waters

The City's Land Development Manual Biology Guidelines state that previously dredged tidal areas, such as Mission Bay, should be considered wetlands under Environmentally Sensitive Lands Regulations (City of San Diego 2018). Therefore, approximately 1.25 acres of beach and 13.81 acres of open water are considered wetland waters under the jurisdiction of the City. Approximately 1.18 acres of coastal salt marsh occurs under the jurisdiction of the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and California Coastal Commission (CCC).For tidal waters associated with Mission Bay, tidal elevation data provided by the nearest National Oceanic and Atmospheric Administration tidal station (San Diego, Station ID 9410170, located on Broadway Pier/San Diego Bay) was utilized along with topographic mapping (NOAA 2024). The extent of waters of the United States, as defined by Section 10 of the Rivers and Harbors Act, was determined to extend up to the mean high water (+4.56 feet above MSL, North American Vertical Datum 88). The extent of waters of the United States/state, as defined by Section 404 of the CWA, the State Porter–Cologne Water Quality Act, and the California Coastal Act, was determined to include all Section 10 waters and additional land up to the highest astronomical tide (+7.19 feet above MSL, North American Vertical Datum 88). In some locations there are walls or other vertical features, which results in the estimated mean high watermark (MHWM) and high tide line (HTL) being co-located.

Historically, the California Department of Fish and Wildlife (CDFW) has not taken jurisdiction over tidally influenced/marine waters. CDFW has indicated that, in general, a line can be drawn around a bay, and the point where a river intersects the bay is where CDFW jurisdiction ends and the resource is considered marine (Weightman, pers. comm. 2017).

3.2.1.2 Non-Wetland Waters

According to the jurisdictional delineation, the Project site includes open water and beach. Approximately 13.81 acres of open water, considered non-wetland waters under the jurisdiction of the USACE, RWQCB, and CCC, and approximately 1.25 acres of beach, considered non-wetland waters under the jurisdiction of the USACE, RWQCB, and CCC, occur. An additional 1.94 acres of

developed land and 0.61 acres of disturbed habitat, both considered non-jurisdictional, occur. A total of 1.22 acres of existing open water inside the restoration area would not be impacted. The Project would affect 16.24 acres of jurisdictional resources (Dudek 2025 and SES 2025).

The jurisdictional resources within the Project site, identified as part of the jurisdictional delineation (SES 2025), are presented in Table 1 and shown in Figure 4, Impacts to Jurisdictional Resources.

Table 1
Jurisdictional Resources within the Tecolote Creek Project Site

Existing Habitat	SDBG Wetland Vegetation Community	Agency Jurisdiction	Jurisdictional Acreage
Wetlands Waters*			
Beach	Marine Habitats	City of San Diego	1.25
Open Water	Marine Habitats	City of San Diego	13.81
Costal Salt Marsh	Salt Marsh	USACE, RWQCB, CCC, City of San Diego	1.18
		Subtotal	*16.24*
Non-Wetland Waters*			
Beach	Marine Habitats	USACE, RWQCB, CCC	1.25
Open Water	Marine Habitats	USACE, RWQCB, CCC	13.81
		Subtotal	*15.06*
		Total Jurisdictional Area	**16.24**

Source: SES 2025
SDBG = San Diego Biology Guidelines (City of San Diego 2018); CCC = California Coastal Commission; USACE = U.S. Army Corps of Engineers; RWQCB = Regional Water Quality Control Board
* The wetland waters, as defined by the City of San Diego, and the non-wetland waters, as defined by USACE, RWQCB, and CCC, overlap.

3.2.2 PROJECT IMPACTS

The Project is one of several component projects within the Mission Bay Improvements Program which may be constructed independently or in association with other projects in accordance with a programmatic Implementation Plan. The analysis of impacts to biological resources is based primarily on the construction footprint identified in this CHRMP. The footprint is based on the total area of proposed improvements including grading, infrastructure, staging areas, and maintenance areas. Existing biological resources within the footprint is assumed to be directly impacted by the construction of the Project; these impacts to biological resources are identified in this section. A precise comparison of impacts and habitat restoration is not included at this stage due to lack of

information regarding the timing of impacts relative to habitat restoration, the precise areas of infrastructure improvements, maintenance areas that would be excluded from mitigation credit, and mitigation agreements with the resource agencies. These additional details are expected to be included in subsequent approvals, as identified in the programmatic Implementation Plan.

The Project is a restoration project providing approximately 18.67 acres of wetland restoration including 1.69 acres of subtidal channels, 2.48 acres of mudflats, 13.88 acres of salt marsh habitat, 0.61 acres of transitional salt marsh, and 2.53 acres of upland/southern foredune habitat, for a total of 21.20 acres of restoration area. Additionally, approximately 1.82 acres of open water, 0.43 acres of coastal salt marsh, 0.87 acres of beach, 1.14 acres of disturbed habitat, and 0.69 acres of disturbed habitat (for a total of 4.95 acres of habitat/land) lie within the development boundary but outside of the restoration and construction boundary. The total development footprint is approximately 26.14 acres. Jurisdictional wetland waters and non-wetland waters overlap, so 16.24 acres of overall impacts would occur to jurisdictional resources (16.24 acres of City wetlands, and 15.06 acres of USACE, RWCQB, and CCC non-wetland waters). There would be 2.54 acres of impacts to disturbed and developed land and 2.41 acres of beach that is considered non-jurisdictional (Dudek 2025 and SES 2025).

Pursuant to the City of San Diego Municipal Code, Land Development Manual– Biology Guidelines (Biology Guidelines), direct impacts to sensitive upland habitat require mitigation (City of San Diego 2018). Implementation of the Project would result in permanent impacts to disturbed habitat.

The restoration area would be constructed by filling the project area with approximately 169,220 cubic yards of soil derived from the other restoration projects within Mission Bay Park into the wetland footprint at the existing location of the Tecolote Creek mouth and an adjacent portion of Mission Bay. The open water would be displaced by the fill and contour grading for the salt marsh habitat. Fill and grading activities would displace invertebrates and fish and alter avian species' foraging areas. Some biochemical reactions may be impacted in the photic zone of open water where sufficient light penetration allows for photosynthesis. In addition, there may be some minimal indirect impacts to fish, shorebirds, and other wildlife species as a result of this contour grading.

A portion of the beach would be converted to salt marsh, which would alter sediment storage and transport, organic material breakdown, macroinvertebrates and other wildlife species, and recreational activities in these areas. Table 2 summarizes Project impacts, and Figures 2 through 4 depict the location, conceptual site plan, and Project impacts.

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Table 2
Proposed Pre-Restoration and Post-Restoration Jurisdictional Resources

Pre-Restoration Condition		**Post-Restoration Conditions**					
Habitat/ Land Cover Types	*Acres*	*Habitat/Land Cover Types*	*Vegetation Communities*	*Mitigation Type[1]*	*Acres*	*Cowardin[2]*	*HGM*
City of San Diego Wetland Waters[3]							
Beach	1.25	Mudflat	N/A	Restoration	0.01	E1UB3L	N/A; Mudflat with no vegetation
		Tidal Marsh	Low, Mid, and High Salt Marsh	Restoration	1.11	E2EM1N	Estuarine Fringe
		Transitional Salt Marsh	Transitional Salt Marsh	Restoration	0.13	E2EM1P	Estuarine Fringe
Open Water	13.81	Subtidal Channels	N/A	Restoration	1.53	E1UBL	N/A; Open Water
		Mudflat	N/A	Restoration	2.29	E1UB3L	N/A; Mudflat with no vegetation
		Tidal Marsh	Low, Mid, and High Salt Marsh	Restoration	10.00	E2EM1N	Estuarine Fringe
		Transitional Salt Marsh	Transitional Salt Marsh	Restoration	0.01	E2EM1P	Estuarine Fringe
USACE, RWQCB, CCC, City of San Diego Wetland Waters[3]							
Coastal Salt Marsh	1.18	Subtidal Channels	N/A	N/A	0.09	E1UBL	N/A; Open Water
		Mudflat	N/A	N/A	0.11	E1UB3L	N/A; Mudflat with no vegetation
		Tidal Marsh	Low, Mid, and High Salt Marsh	Enhancement	0.91	E2EM1N	Estuarine Fringe
		Transitional Salt Marsh	Transitional Salt Marsh	Enhancement	0.07	E2EM1P	Estuarine Fringe
USACE, RWQCB, CCC Non-Wetland Waters[3]							
Beach	3.66	Mudflat	N/A	Rehabilitation/ Restoration	0.01	E1UB3L	N/A; Mudflat with no vegetation
		Tidal Marsh	Low, Mid, and High Salt Marsh	Rehabilitation/ Restoration	1.11	E2EM1N	Estuarine Fringe
		Transitional Salt Marsh	Transitional Salt Marsh	Rehabilitation/ Restoration	0.37	E2EM1P	Estuarine Fringe
		Southern Foredune[4]	Southern Foredune	N/A	2.16	E2SS	N/A; Upland
Open Water	13.81	Subtidal Channels	N/A	Rehabilitation/Restoration	1.53	E1UBL	N/A; Open Water
		Mudflat	N/A	Rehabilitation/Restoration	2.29	E1UB3L	N/A; Mudflat with no vegetation
		Tidal Marsh	Low, Mid, and High Salt Marsh	Rehabilitation/Restoration	10.00	E2EM1N	Estuarine Fringe
		Transitional Salt Marsh	Transitional Salt Marsh	Rehabilitation/Restoration	0.01	E2EM1P	Estuarine Fringe

Table 2
Proposed Pre-Restoration and Post-Restoration Jurisdictional Resources

Pre-Restoration Condition		**Post-Restoration Conditions**					
Habitat/ Land Cover Types	*Acres*	*Habitat/Land Cover Types*	*Vegetation Communities*	*Mitigation Type[1]*	*Acres*	*Cowardin[2]*	*HGM*
Non-Jurisdictional							
Beach	2.41	Transitional Salt Marsh	Transitional Salt Marsh	Restoration	0.25	E2EM1P	Estuarine Fringe
Southern Foredune	Restoration	2.16	E2SS	N/A; Upland			
Disturbed	0.61	Subtidal Channels	N/A	Re-establishment/ Restoration	0.05	E1UBL	N/A; Open Water
		Mudflat	N/A	Re-establishment/ Restoration	0.04	E1UB3L	N/A; Mudflat with no vegetation
		Tidal Marsh	Low, Mid, and High Salt Marsh	Re-establishment/ Restoration	0.46	E2EM1N	Estuarine Fringe
		Transitional Salt Marsh	Transitional Salt Marsh	Re-establishment/ Restoration	0.05	E2EM1P	Estuarine Fringe
Developed	1.94	Subtidal Channels	N/A	Re-establishment/ Restoration	0.03	E1UBL	N/A; Open Water
		Mudflats	N/A	N/A	0.03	E1UB3L	N/A; Mudflat with no vegetation
		Tidal Marsh	Low, Transitional, and Mid Salt Marsh	Re-establishment/ Restoration	1.4	E2EM1N	Estuarine Fringe
		Transitional Salt Marsh	Transitional Salt Marsh	Re-establishment/ Restoration	0.11	E2EM1P	Estuarine Fringe
		Southern Foredune[4]	Southern Foredune	N/A	0.37	E2SS	N/A; Upland

Notes:
HGM = Hydrogeomorphic Method; USACE = U.S. Army Corps of Engineers; RWQCB = Regional Water Quality Control Board CCC = California Coastal Commission; N/A = not applicable.
1 USACE and RWQCB define the mitigation type as rehabilitation or re-establishment (a form of restoration), and CCC and City of San Diego define the mitigation type as restoration.
2 Source: Cowardin et al. 1979.
3 The wetland waters and the non-wetland waters overlap.
4 Southern foredune is upland habitat and not a jurisdictional resource.

4 SITE SELECTION CRITERIA

Mission Bay is an important resource within coastal San Diego, providing low-cost public recreation to San Diego County residents. Past emphasis on recreation has degraded environmental conditions associated with water quality and wildlife habitat that are equally essential functions of Mission Bay. Selection of the Project location is keyed to incoming waters from former tributaries of the San Diego River, including Tecolote Creek, and Cudahy Creek. These entry points are considered the optimal locations where water quality improvements are possible using biological filtration from restored self-sustaining native salt marsh vegetation communities and mudflats that support macro-benthic invertebrate populations.

Tecolote Creek is located within the Smiley Lagoon–Mission Bay sub-watershed, encompassing 67 square kilometers of highly urbanized area within San Diego, primarily located in the Clairemont neighborhood. Land uses within the sub-watershed consist of single-family residential with some multifamily residential, commercial businesses, recreational and park, and natural land uses. Stormwater and irrigation runoff from approximately 9.71 square miles flows into Tecolote Creek and out to Mission Bay. Tecolote Creek discharges into Mission Bay just north of the Fiesta Island causeway, south of Tecolote Shores Park, and west of Fiesta Island.

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5 BASELINE CONDITIONS

Baseline conditions are included in this section and are used to help determine the appropriate success criteria, as well as guide restoration design, installation, and maintenance.

5.1 LOCATION

Mission Bay is a public recreational area with open water and beaches for swimming, wading, and water sports. The Project site is located along the eastern shoreline of Mission Bay, east of Fiesta Island along both sides of the Fiesta Island causeway, and west of East Mission Bay Drive at the Tecolote Creek outfall. The entire Project site is located within the CCC and City of San Diego Coastal Zones (see Figure 1 and Figure 2). Fiesta Bay surrounds the Project site to the west and developed land is to the east. The Project site is located within the coastal zone on the U.S. Geological Survey 7.5-minute La Jolla quadrangle map in Township 16 South, and Range 3 West Section 17.

5.2 TOPOGRAPHY AND BATHYMETRY

Topographic data was obtained from the U.S. Geological Survey 2014 Light Detection and Ranging survey (USGS 2014). Bathymetry data was obtained from the Mission Bay Park 2013 Bathymetry and Eelgrass Inventory (Merkel 2013). On-site elevation ranges from 0 to 14 feet above sea level on land and 0 (at sea level) to 12 feet below sea level under water (Figure 6, Topography). The developed land to the east is relatively flat for approximately 0.5 miles and then the terrain transitions to hills and canyons. Runoff from the canyons is directed into storm drains that outlet into Mission Bay.

5.3 HYDROLOGY

Tecolote Creek is within the San Diego watershed Hydrologic Unit Code 8 18070304, subwatershed Mission Bay, Smiley Lagoon–Mission Bay Hydrologic Unit Code 12- 180703041102 (Figure 7, Hydrologic Setting). Tecolote Creek is surrounded by development and parkland. The Project site abuts the open water of Mission Bay to the north and south, and disturbed land to the east and west. The site receives water from Pacific Ocean tides and from precipitation and irrigation runoff that flows through the surrounding canyons and urbanized areas into Tecolote Creek, which enters Mission Bay just north of the Fiesta Island causeway (Figure 8, Project Area Outfalls and Storm Drain System).

The main channel of Tecolote Creek extends east beneath Interstate 5 and continues in an easterly direction for approximately 1.5 miles before it bends in a 90-degree direction to the north. The watercourse length is approximately 7.64 miles. There is a system of tributaries that collect runoff, within approximately 9.71 square miles, which flows into Tecolote Creek and ultimately into Mission Bay.

There is approximately 1.18 acres of coastal salt marsh present along the edges of the mouth of Tecolote Creek. Approximately 3.66 acres of beach area is present on the north and south sides of Fiesta Island just past the Fiesta Island causeway and just west of the Mission Bay Playground. Approximately 1.94 acres of developed area is within the Project site, including turf and ornamental plantings, and asphalt roads used by day visitors. The 0.61 acres of disturbed areas includes a dirt parking lot on the north side of the entrance to the causeway and disturbed uplands on the south side of the project site and along the causeway. All facilities are maintained by the City Parks and Recreation Department.

The remainder of the Project site consists of an approximately 13.88-acre portion of Mission Bay open water and the adjacent shoreline that is subject to tidal influence and the tidal flow patterns of Mission Bay.

Four pressure gauges were placed at subtidal locations to collect tide measurements as part of the Mission Bay Programmatic Environmental Impact Report Hydrology Study (Moffat & Nichol 2019a). These measurements were used to assess the tidal behavior of Mission Bay at the Project site. No anomalous behavior of Mission Bay tides was identified compared to tidal measurements from the La Jolla, California, Station 9410230 (NOAA 2019). There is virtually no measurable difference between Mission Bay tides and those of the ocean (Appendix A.)

5.3.1 HYDROLOGIC ANALYSIS

A hydrologic analysis (Appendix A) was performed for Tecolote Creek to determine its peak flow rates. The Federal Emergency Management Agency's recognized 100-year peak flow rates were compared to calculated 100-year peak flow rates to determine the design flow rates. Two different peak flow rates resulted from the analyses: a Federal Emergency Management Agency Flood Insurance Study flow rate and a calculated flow rate based on precipitation values obtained from the City's rainfall isopluvial maps. The two peak flow rates were compared and the more conservative flow rate of 4,900 cubic feet per second was chosen to perform the analysis (Appendix A).

An analysis of tidal mixing was performed to determine areas of Mission Bay where erosive tidal flow occurs (Moffatt & Nichol 2019a). The study also revealed areas of Mission Bay where tidal mixing and water replacement are lacking or absent. The area known as the Northeast Inlet corresponding to the east side of Fiesta Island is an area where tidal circulation is limited. Water exchange within the area is very limited, requiring 27.1 days for complete water exchange (Moffatt & Nichol 2019b). The limited tidal circulation in the Project site further compounds water quality issues and the need for water quality improvements in the Project site.

5.3.2 SEA-LEVEL RISE

Sea-level rise would result in the migration of existing Mission Bay wetland habitats upward and/or in the landward direction because of the elevated tidal prism. For the purposes of wetland planning, understanding habitat sustainability, and maintaining public use, sea water levels under sea-level-rise scenarios are projected to approximate tidal elevations. Existing sea-water-level elevations and future elevations by the year 2100, based on the two chosen sea-level-rise scenarios (3.6 feet and 7 feet), are provided in Table 3 and summarized below (see also Appendix A).

- **Sea-Level Rise of 3.6 Feet**. Under this scenario, most of the Project site would be subject to tidal inundation during high tides. The restored salt marsh habitat would likely transform to less low marsh and more mudflat with subtidal habitat. Without raising the elevation of the site by filling or implementing adaptation measures, the site would effectively become mudflat with tidal channels. The exception would be the southern foredune habitat, which would become vegetated marsh in the low areas, and transitional salt marsh and upland habitat in the remainder of the southern foredune habitat areas (Appendix A).
- **Sea-Level Rise of 7.0 Feet**. Under this scenario, the wetlands would be nearly all subtidal and mudflat habitat area, with some limited perimeter salt marsh on earthen slopes. Without raising the elevation of the site by filling or implementing adaptation measures, the site would effectively become mudflat with tidal channels. The southern foredune features would become vegetated marsh along the toe of the slope and transitional salt marsh and upland habitat in the remainder of the southern foredune areas (Appendix A).

Table 3
Change to Habitat Areas in Acres with 3.6 and 7.0 Feet of Sea-Level Rise

Proposed Habitats	Design Acreage			Sea-Level Rise of 3.6 feet	Sea-Level Rise of 7 feet
	Inside of Restoration Area	Outside of Restoration Area	Overall Design Area		
Subtidal	1.69	1.82	3.51	5.32	13.95
Mudflat	2.48	0	2.48	14.99	8.34
Low Salt Marsh	3.35	0	3.35	0.30	0.19
Mid Salt Marsh	6.83	0	6.83	0.92	0.38
High Salt Marsh	3.70	0	3.7	0.25	0.20
Transitional Salt Marsh	0.61	0	0.61	0.43	0.48
Upland	0	1.14	1.14	1.14	1.14

Table 3
Change to Habitat Areas in Acres with 3.6 and 7.0 Feet of Sea-Level Rise

Proposed Habitats	Design Acreage			Sea-Level Rise of 3.6 feet	Sea-Level Rise of 7 feet
	Inside of Restoration Area	Outside of Restoration Area	Overall Design Area		
Developed/Upland	0	1.11	1.11	1.93	1.04
Beach/Southern Foredune	2.53	0.45	2.98	0.44	0.00
Coastal Salt Marsh	0.43	0.43	0.86	0.43	0.43
Total Acres	**21.19**	**4.95**	**26.14**	**26.15**	**26.15**

Source: Appendix A.

5.4 SOIL CONDITIONS

Soils within the restoration area are mapped as "made land" for the areas above the water line and as "lagoon water" within the open water portions of the Project site (USDA 2021) (Figure 9, Soils). Made land consists of smooth, level areas that have been filled with dredged soils from Mission Bay. The fertility is medium, the permeability is rapid, and the runoff is slow to moderate (NRCS 2021). Considering that Mission Bay is a dredged feature, it is likely that soils at Mission Bay's bottom are relatively intact soils from the historical San Diego River estuary.

5.5 EXISTING HABITATS AND LAND COVER TYPES

The City's Biology Guidelines categorize existing habitats and land cover types by tier levels to represent the sensitivity of these communities. Land cover types mapped within the Project site consisted of beach, open water, coastal salt marsh, disturbed land, and developed land. Beach, open water, and coastal salt marsh existing habitats are considered sensitive, per the City's Biology Guidelines (City of San Diego 2018). The existing habitats and land cover types are summarized in Table 4 and the following subsections, and are depicted in Figure 10, Existing Habitats and Special-Status Plants.

Table 4
Existing Habitats and Land Cover Types Occurring Within Tecolote Creek

Existing Habitats and Land Cover Types	City of San Diego Tier Level*	Inside of Restoration Area (acres)	Outside of Restoration Area (acres)	Overall Project Footprint (acres)
Riparian and Wetlands				
Beach	Wetland	1.25	0	1.25
Open Water	Wetland	13.81	1.82	15.63
Coastal Salt Marsh	Wetland	1.18	0.43	1.61
Other Cover Types				
Beach	IV	2.41	0.87	3.28
Disturbed Land	IV	0.61	1.75	1.75
Developed Land	N/A	1.94	2.63	2.63
	Total	**21.19**	**4.95**	**26.14**

Notes:
N/A = not applicable
* Vegetation tiers are defined by the City of San Diego's Biology Guidelines (City of San Diego 2018).

5.5.1 BEACH (WETLAND COMMUNITY, HOLLAND CODE 64400)

Beach habitat is classified as sandy and/or cobbly mainly unvegetated habitat on coastal strands, lagoons, or lakes (Oberbauer et al. 2008). Beach habitat occurs along most of the shoreline of Mission Bay and along approximately 4.53 acres within the overall Project site (3.66 acres within the restoration area and an additional 0.87 acres outside of the restoration area). Although primarily unvegetated, some species, such as woolly seablite (*Suaeda taxifolia*), occur on the beach areas at the Project site. Approximately 2.41 acres of beach is considered a Tier IV upland above HTL and approximately 1.25 acres of beach is considered a USACE, RWQCB, and City-wetland below HTL.

5.5.2 DEVELOPED LAND (HOLLAND CODE 12000)

Developed land is the primary terrestrial land cover occurring within the Improvement Zone. Developed areas consist of residential areas, shopping centers, businesses, paved roads, parking lots, landscaped area, and areas with ornamental plantings. Approximately 2.63 acres of developed land occurs within the Project site (1.94 acres within the restoration area and an additional 2.63 acres outside of the restoration area).

Refer to the Biological Resources Technical Report prepared for the Project for more information (Dudek 2025).

5.5.3 DISTURBED HABITAT (TIER IV HOLLAND CODE 11300)

Disturbed habitat is composed mainly of non-native species and areas of bare ground. These areas are repeatedly exposed to human activities or are areas that were previously disturbed by humans. Disturbed habitat occurs throughout the Improvement Zone, primarily on Fiesta Island and areas north of Sea World Drive. Characteristic species include non-native salt-tolerant species such as iceplant (*Mesembryanthemum* sp.) and Russian thistle (*Salsola tragus*), and non-native grasses such as ripgut grass (*Bromus diandrus*) and red brome (*Bromus madritensis*). Native salt-tolerant species include woolly seablite, Lewis' evening-primrose (*Camissoniopsis lewisii*), salt heliotrope (*Heliotropium curassavicum*), and other salt marsh species. Approximately 1.74 acres of disturbed land occurs within the Project site (0.61 acres within the restoration area and an additional 1.14 acres outside of the restoration area).

Refer to the Biological Resources Technical Report prepared for the Project for more information (Dudek 2025).

5.5.4 OPEN WATER (WETLAND COMMUNITY, HOLLAND CODE 64110)

Open water occurs away from the shoreline within Mission Bay and consists of a soft bottom that may be vegetated with eelgrass (*Zostera marina*) or be unvegetated. Open water occupies approximately 15.64 acres of disturbed land occur within the Project site (13.81 acres within the restoration area and an additional 1.82 acres outside of the restoration area). According to the Biological Resources Technical Report prepared for the Project, there is no eelgrass located within the Project site (Dudek 2025). Refer to the Biological Resources Technical Report prepared for the Project for more information (Dudek 2025).

5.5.5 SOUTHERN COASTAL SALT MARSH (WETLAND COMMUNITY; HOLLAND CODE 52120)

Southern coastal salt marsh is common in bays, estuaries, and lagoons, and is influenced by tidal action (Oberbauer et al. 2008). Dominant species include Pacific pickleweed (*Salicornia pacifica*), cordgrass (*Spartina foliosa*), saltwort (*Batis maritima*), alkali heath (*Frankenia salina*), and seablite (*Suaeda* sp.). Sensitive species, such as woolly seablite and estuary seablite (*Suaeda esteroa*), are present within this habitat. Southern coastal salt marsh occurs at the mouth of Tecolote Creek. Approximately 1.61 acres of disturbed land occurs within the Project site (1.18 acres within the restoration area and an additional 0.43 acres outside of the restoration area).

Refer to the Biological Resources Technical Report prepared for the Project for more information (Dudek 2025).

5.6 SPECIAL-STATUS PLANT SPECIES

Three special-status plant species—estuary seablite, Lewis' evening-primrose, and woolly seablite—were observed within the wetland restoration area footprint (see Figure 10).

Woolly seablite has a California Rare Plant Rank 4.2, plants of limited distribution and fairly threatened in California, and blooms between January and December. This perennial evergreen shrub occurs in coastal bluff scrub, southern foredunes, and coastal salt marshes. This species occurs within the coastal salt marsh and beaches of the Project site.

Lewis' evening-primrose has a California Rare Plant Rank of 3, plants of limited distribution – a watch list, and blooms March through June. This annual herb occurs in coastal bluff scrub and southern foredunes in sandy or clay soils. This species occurs on the northeast side of the Project site.

Estuary seablite is a California Rare Plant Rank list 1B.1 species that blooms July through October. This perennial herb occurs in coastal salt marshes below 5 meters where tidal influences are present. This species was observed at the mouth of Tecolote Creek. This species occurs within the coastal salt marsh of the Project site.

5.7 WILDLIFE EVALUATION

A total of 142 wildlife species were observed and documented within the Improvement Zone during vegetation mapping surveys, special-status plant surveys, and focused surveys for special-status species. No special-status wildlife species were observed within the Tecolote Creek wetland restoration area.

According to the Biological Resources Technical Report, there is suitable habitat within and directly adjacent to the wetland restoration area for the federally threatened and CDFW species of special concern western snowy plover (*Charadrius* nivosus nivosus) and state-listed California least tern (*Sterna antillarum browni*). No western snowy plover or California least tern have been observed within the restoration area. The beach areas within the Project site that have nesting potential experience intense public recreational use on weekends and holidays throughout the year, and therefore, it is doubtful that these areas are actually suitable for these species (Figure 11, Special-Status Wildlife Species – California Least Tern and Western Snowy Plover) (Dudek 2025).

There is suitable habitat within the wetland restoration area for the federally endangered and state endangered light-footed Ridgeway's rail (*Rallus obsoletus levipes*). However, the area within the

Project site that is delineated as suitable nesting habitat is highly degraded, and therefore, it is doubtful that this area is suitable for this species. No light-footed Ridgeway's rails have been observed within the restoration area, and therefore, it is doubtful that this area is suitable for this species (Figure 12, Special-Status Wildlife Species – Light-Footed Ridgeway's Rail Suitable Habitat) (Dudek 2025).

There is suitable habitat directly adjacent to the wetland restoration area for the CDFW species of special concern western burrowing owl (*Athene cunicularia hypugaea*) and the state endangered Belding's savannah sparrow (*Passerculus sandwichensis beldingi*). No western burrowing owl or Belding's savannah sparrow have been observed within the restoration area (Figure 13, Special-Status Wildlife Species – Western Burrowing Owl, and Figure 14, Special-Status Wildlife Species – Belding's Savannah Sparrow) (Dudek 2025).

Refer to the Biological Resources Technical Report (Dudek 2025 for additional information.

6 SITE PROTECTION MEASURES

Prior to the initiation of restoration activities, fencing and signage would be installed to delineate the work areas and prevent unauthorized impacts by the contractor during the installation process. Additionally, this fence would serve to discourage unauthorized pedestrian traffic from entering the wetland restoration area.

During the installation process, work would be monitored by the Project biologist to ensure compliance with the wetland restoration area boundaries. The Project biologist would also review the signage and fencing to verify that they are in good repair and functioning as intended. The Project biologist would make recommendations to the installation contractor if repairs, additions, or other modifications need to be made to the wetland restoration area protection fence.

During the 5-year maintenance and monitoring period, the wetland restoration area would be restricted from public access and would be delineated with temporary fencing and signage stating the nature of the work within the area and access restrictions, as appropriate.

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7 RESTORATION WORK PLAN

This section describes who would be responsible for each implementation task and how the proposed restoration program would be accomplished.

7.1 PROJECT IMPLEMENTATION PERSONNEL

7.1.1 PERMITTEE/PROJECT MANAGER

The City of San Diego is the owner/permittee of the Tecolote Creek property. The City would be responsible for restoration installation and would be responsible for the successful implementation of the work described within this Plan. The City (or subsequent legal owners) would be financially responsible for implementation and management of the Project.

7.1.2 PROJECT BIOLOGIST

The City would select a qualified Project biologist who would review the environmental permits, documents, final Plan, and restoration construction documents, and help to ensure that all protective fencing, pre-work bird surveys, and any other required items are adequately performed prior to beginning restoration work.

The Project biologist would perform site monitoring during restoration implementation and throughout the 5-year maintenance and monitoring period. The Project biologist would prepare restoration annual reports with required biological data and submit them to the City and the regulatory agencies. The Project biologist would have a degree in biology, ecology, or related field, and be able to demonstrate experience with similar restoration projects in San Diego County. The Project biologist would possess at least 5 years of habitat restoration experience in Southern California and meet all the minimum requirements listed in Bio Guidelines, Land Development Manual, and Whitebook second edition (City of San Diego 2021b)

7.1.3 RESTORATION CONTRACTOR

The City would select a qualified restoration contractor to implement the restoration installation work and provide subsequent wetland restoration area maintenance. Installation and wetland restoration work would be performed by a contractor possessing a valid California landscape contractor's license (Class C-27) who has previous experience with native habitat restoration in San Diego County and who can demonstrate at least three successful similar restoration projects in Southern California. Implementation crews must be able to identify San Diego County native plants and common weed species and demonstrate knowledge of habitat restoration techniques.

The restoration contractor would be responsible for conformance to this Plan and regulatory agency permit requirements. The restoration contractor's responsibility for installation would continue until successful completion and final acceptance by the City and the Project biologist. The restoration contractor would not be released from contractual obligations for installation until written notification is received from the City that all required installation tasks as defined in the installation contract, final plans and specifications, this Plan, and Project permits have been successfully completed.

After initial installation and completion of implementation, the City would contract for 5 years of maintenance services performed by a qualified maintenance contractor that specializes in the maintenance/management of habitat restoration/natural lands. Maintenance work would be performed as indicated herein and per the Project biologist's recommendations. The City may choose to hire a maintenance contractor that is separate from the restoration contractor and may replace a contractor that fails to perform work satisfactorily.

7.1.4 SEED SUPPLIER

The seed supplier would be a qualified commercial native plant seed supplier having at least 2 years' experience collecting seed, experience collecting sources from within the San Diego area, and must have experience collecting seeds from native areas appropriate for this Project. The seed supplier would also meet all the requirements as listed in Biology Guidelines, Landscape Standards, and the Whitebook (City of San Diego 2021b).

Conditions for seed collection would follow sound ecological restoration practices. The Project biologist may substitute plant species should the species listed in this Plan not be available at the time of collection or purchase. Seed collection would comply with all regulatory agency permits and requirements.

7.2 PRELIMINARY DESIGN AND ENGINEERING

7.2.1 PROJECT COMPONENTS

The Project would include restoration of approximately 18.65 acres consisting of low salt marsh, mid salt marsh, high salt marsh, transitional salt marsh, subtidal channels, and mudflats, and 2.53 acres of southern foredune habitat (see Tables 4 and 6). Salt marsh vegetation would provide water quality treatment of stormwater and bay water and provide diverse wildlife habitat. A subtidal channel is proposed to convey flows from the mouth of Tecolote Creek to the open waters of Mission Bay. When capacity of the subtidal channel is exceeded, freshwater would flow into the wetland area, providing longer residence time for the incoming water to filter through the salt

marsh vegetation before entering Mission Bay. The salt marshes would provide water quality benefits to the stormwater runoff through nutrient retention and sediment and toxicant trapping (Appendix A).

Preliminary 30% design level construction drawings can be found in Appendix B. The drawings are currently in draft phase and are not finalized for construction but provide an understanding of the Project components and layout.

7.2.2 PRELIMINARY ACCESS

Land-based construction equipment would access the site from East Mission Bay Drive and the Fiesta Island causeway (Appendix A).

7.2.3 PRELIMINARY PROJECT SCHEDULE

The City has a beach area construction moratorium during which non-emergency construction activities cannot be scheduled. This includes the days preceding and immediately following the Memorial Day, Fourth of July, and Labor Day holidays. This may affect scheduling of the overall Project; however, it is anticipated that it would have minimal effect. Project construction would be planned around the construction moratorium and during the dry season of the year when rain events and discharges at the existing outfall should be at a minimum. All vegetation removal would occur outside of the bird breeding season.

The Project is estimated to require 2 weeks of mobilization, 4 months of earthwork, and 1.5 months for irrigation and planting. Construction of a bridge would require approximately 17 months (including demobilization). This assumes that soil can be imported from Fiesta Island and that there is no work in wet conditions using a dredge and/or barges. Work taking place in a wet environment may take longer than anticipated, depending on the weather and tidal conditions at the time of construction. The construction schedule is provided in Appendix A.

7.3 SITE PREPARATION AND PLANT INSTALLATION

Site preparation would be conducted under direction from the City and the Project biologist. Specific site preparation tasks are outlined below. Prior to site preparation, photo points would be identified, and pre-implementation photos taken to document site conditions prior to restoration implementation.

Prior to issuance of land development permits, including clearing, grubbing, grading, and/or construction permits, the Project applicant or designee would provide written confirmation that a biological monitor, approved by the City, has been retained. To prevent disturbance to areas outside

the limits of grading, all grading activities would be monitored by the Project biologist, including any clearing, grubbing, and/or grading activities within 100 feet of aquatic resources.

7.3.1 PLANT SALVAGE

Because of the limited amount of native plant cover, existing native vegetation on site would be salvaged to the greatest extent practicable. Native plant species to be salvaged on site include special status species, estuary seablite (California Rare Plant Rank list 1B.1), Lewis' evening primrose (California Rare Plant Rank of 3), woolly seablite (California Rare Plant Rank 4.2), and any other native marsh species that could be incidentally impacted by grading activity, such as pickleweed. Other plant species as identified by the Project biologist would be salvaged and reused on site. All native plants intended for salvage would be kept on site in a location agreed upon by the Project biologist and the construction manager to prevent further damage during vegetation removal and site preparation.

7.3.2 VEGETATION REMOVAL

All vegetation remaining within the Project site after plant salvage would be removed using a small backhoe and/or excavator. Additionally, dead thatch, deadwood, and other organic litter would be removed from the site.

7.3.3 SOIL IMPORT

Approximately 169,200 cubic yards of soil would be imported for the Project (Appendix A). There is potential for these soils to come from other wetland projects within Mission Bay. For example, the North Fiesta Island Wetland Restoration Project has an anticipated surplus of 315,000 cubic yards of material that is suitable for the Tecolote Creek wetland restoration area. Earthmoving equipment would be able to efficiently remove material from a stockpile area on Fiesta Island, transport it the relatively short distance to the Tecolote Creek wetland restoration area, and return for another load. This is the lowest-cost option for material disposal/reuse (Moffatt & Nichol 2019b).

7.3.4 GRADING PLAN

Following vegetation removal, the overall site would be graded to create stratified elevations for the subtidal, mudflats, low salt marsh, mid salt marsh, high salt marsh, transitional salt marsh, and southern foredune areas. Grading would be designed to allow the main subtidal channel and secondary subtidal water level elevations to rise with tide levels and allow bay water to inundate the salt marsh wetland areas during flood tide conditions. During ebb tide conditions, the salt marsh areas would drain into the subtidal channels and be carried out through the connections back into

Mission Bay. This process of inundation and draining is necessary for the health of the salt marsh areas and provides water quality benefits by circulating and filtering the water through the wetland vegetation prior to being returned to Mission Bay.

Contour grading includes microtopographic variances, as shown in the preliminary construction drawings (Appendix B). The grading is described in further detail in the following subsections. The preliminary engineering report is attached in Appendix A and a preliminary set of construction drawings are attached in Appendix B. The final grade would be reviewed and approved by the Project biologist prior to removing grading equipment from the site. Exact elevations would be determined based on the depth to saturated soil and groundwater. Ideal elevation and proposed (estimated) elevation ranges are provided in Table 5.

Table 5
Salt Marsh Habitats, Planting Palette, and Elevations

Habitat and Landform Designations	Planting Palette	Ideal Elevation Range (feet)	Proposed (Estimated) Elevations (feet)
Developed[1]	TBD (turf or bare soil)	N/A	6.8 to 16.0
Southern Foredune (upland)	Southern Foredune Plant Palette	Above 9.5[2,3]	
Transitional Salt Marsh	Transitional Salt Marsh Plant Palette	4.8 to 6.8[2,3]	4.8 to 6.8
High Salt Marsh	High Salt Marsh Plant Palette	2.8 to 4.8 [2,3]	3.7 to 4.8
Mid Salt Marsh	Mid Salt Marsh Plant Palette	1.3 to 3.0	1.9 to 3.7
Low Salt Marsh	Low Salt Marsh Plant Palette	0.3 to 2.3[2,3]	1.1 to 1.9
Mudflats	No Planting	–2.7 to 0.3	–3.7 to 1.1
Subtidal Channels	No Planting	Below –2.7[2,3]	–6.0 to –3.7

Notes:
TBD = to be determined; N/A = not applicable.
1 Not part of the restoration area; would be restored by San Diego Parks and Recreation.
2 Source: Everest 2018.
3 Tidal statistics derived from monitoring at the site using tide gages over a 1-year period (Moffatt & Nichol 2019a).

7.3.4.1 Subtidal Channels

Approximately 1.69 acres of subtidal channels ranges from an elevation of approximately –6 feet to –3.7 feet. A subtidal channel runs from the mouth of Tecolote Creek to the west for approximately 750 feet, where it connects with a subtidal channel that runs north/south for approximately 1,100 feet. These subtidal channels connect the basins on either side of the existing Fiesta Island causeway and the freshwater from Tecolote Creek to create the desired tidal circulation for water quality improvement. The proposed channel varies in width from approximately 10 feet wide on the south side of the Fiesta Island causeway to approximately 120 feet wide at the mouth of Tecolote Creek, and has a bank slope of 6:1 (horizontal to vertical) on the north side of the north Fiesta Island causeway and 3:1 (horizontal to vertical) on the south side (Appendix A).

7.3.4.2 Mudflats

Intertidal mudflats are unvegetated, unconsolidated mud or sandy bottom habitat. Approximately 2.48 acres of mudflats occur throughout the restoration area. The proposed elevation ranges from approximately –3.7 feet to approximately 1.1 feet situated low in the intertidal zone, between the subtidal channels and low salt marshes. The mudflats would be inundated at high tide and be exposed during low tide (Appendix A).

7.3.4.3 Low Salt Marsh

Approximately 3.35 acres is proposed between the mudflats and the mid salt marsh areas. The proposed elevation of the low salt marsh varies from approximately 1.1 feet to 1.9 feet. The slight variation in elevations is proposed to promote drainage of the area during periods between inundations (Appendix A).

7.3.4.4 Mid Salt Marsh

Approximately 6.83 acres of mid salt marsh occur between low salt marsh and high salt marsh. The mid salt marsh is irregularly inundated by tides relative to the low marsh, but at a higher frequency than the high marsh. The width of the mid salt marsh varies slightly, but in general is approximately 50 feet wide. The mid salt marsh wetland elevation ranges from 1.9 feet to 3.7 feet (Appendix A).

7.3.4.5 High Salt Marsh

Approximately 3.7 acres of intertidal high salt marsh occurs between mid salt marsh and supratidal transition salt marsh. The high salt marsh is irregularly to intermittently flooded. The proposed elevation ranges from 3.7 feet to approximately 4.8 feet (Appendix A).

7.3.4.6 Transitional Salt Marsh

Supratidal transition zone habitat occurs between the range of the highest high tides and non-tidal supratidal uplands. A thin band of approximately 0.61 acres of transitional salt marsh occurs between southern foredunes and high marsh on the western and northeast sides of the Project site (at 5:1 slope and 4:1 slope, respectively), and between high marsh and developed lands on the southeastern side of the Project site. The elevation ranges from 4.8 feet to 6.8 feet. The habitat within transitional salt marsh is a mixture of high salt marsh and southern foredune habitat and can occupy some of the same elevations (Appendix A).

7.3.4.7 Southern Foredune Uplands

Southern foredunes are an important habitat type bordering wetlands that provide a soft shoreline transition that can move with waves, tides, and currents, yet still protect the backshore. Southern foredunes are a rare and sensitive habitat in Southern California and provide habitat for sensitive plant and wildlife species.

Approximately 2.53 acres of southern foredune uplands is proposed on the northeastern and western areas of the Project site. The southern foredunes have a base elevation of 6.8 feet and a top elevation of approximately 16 feet and would be approximately 3 to 4 feet above the existing elevation of Fiesta Island Road. The southern foredune habitat on the northeastern side of the Project site (adjacent to the Mission Bay playground) would have a 4:1 slope. The western side of the southern foredune (on Fiesta Island) would have a slope of 5:1 on the wetland side and a slope of 3:1 on the developed side. This southern foredune design creates a physical barrier and visual screen of vehicular movements on Fiesta Island Road. The southern foredune features would also add to the biodiversity of the wetland restoration.

7.3.5 PLANTING PLAN

The wetland restoration area would be revegetated with native species that are appropriate to the site context and restoration goals. The intent of these plant palettes is to create a diverse assemblage of native species that would provide appropriate functions and services. The plant palettes have been designed to include a mixture of species adapted to the wetland restoration area's hydrology. Plants with different germination responses, wetland affinities, and growth forms have been chosen to provide plant growth under a wide range of conditions that may occur in the wetland restoration area. Any eelgrass planting and/or oyster bag installation proposed in this area and an Eelgrass Oyster Restoration Plan is in progress which would inform the restoration of these species. Therefore, eelgrass and oyster bed restoration would not be discussed within this Plan.

7.3.5.1 Container Plant Installation

Implementation of this Plan must be coordinated with the restoration contractor, applicant, and Project biologist. If a grading contractor has been retained for any contour grading within the Project site, then this Plan must also be coordinated with the grading contractor. The wetland restoration area would be vegetated with native species that are appropriate to the salt marsh vegetation community context and restoration goals. The target habitats to be established are low and mid salt marsh, with a transitional salt marsh in between. Low salt marsh dominant species would include Parish's glasswort (*Arthrocnemum subterminale*), pickleweed, and saltwort. Mid salt marsh dominant species would include alkali heath, Parish's glasswort, pickleweed, saltgrass (*Distichlis spicata*), saltwort. High salt marsh dominant species would include alkali heath, Parish's glasswort, pickleweed, saltgrass, estuary seablite, a special status species, and woolly seablite, a special status species, and saltwort. The transitional salt marsh area's dominant species would include alkali heath, Parish's glasswort, pickleweed, saltgrass, saltwort, and estuary seablite, a special status species. The upland dominant species would include beach saltbush (*Atriplex leucophylla*), beach suncup (*Camissoniopsis cheiranthifolia*), and Lewis' evening-primrose, a special status species, and woolly sea-blite, a special status species.

The planting palettes for low salt marsh, mid salt marsh, high salt marsh, transitional salt marsh, and southern foredunes (upland) are provided in Tables 6 through 10. The intent of these plant palettes is to create a diverse assemblage of native species that would increase the area's functions and services, such as water quality and habitat value. The optimal timing for plant installation and seed application is in the fall after the first rain. However, for this project planting and seed installation would take place once the contour grading is completed. Container plants and seed mixes would be sourced from locations as close as possible to the wetland restoration area, at a minimum, from within the same wetland habitat type. Some species may not be available at the time of initial installation. If species are not available, they would be obtained when available and applied at a later date under the direction of the Project biologist. Alternatively, a species may be substituted for unavailable species with the direction and approval of the Project Biologist and the City.

Table 6
Tecolote Creek 3.35-Acre Low Salt Marsh Container Plant Palette[1]

Scientific Name	Common Name	Size	Average Spacing (feet on center)	Quantity (per acre)[2]	Quantity (total)[2]
Arthrocnemum subterminale	Parish's pickleweed	Rose pot/flats	4	1,838	6,156
Batis maritima	saltwort	Rose pot/flats	4	275	921

Table 6
Tecolote Creek 3.35-Acre Low Salt Marsh Container Plant Palette[1]

Scientific Name	Common Name	Size	Average Spacing (feet on center)	Quantity (per acre)[2]	Quantity (total)[2]
Jaumea carnosa	fleshy Jaumea	Rose pot/flats	4	185	620
Salicornia pacifica	Pacific pickleweed	Rose pot/flats	4	240	804
Spartina foliosa	California cord grass	Rose pot/flats	4	185	620
		Total	**—**	**2,723**	**9,120**

Note:
1 The low salt marsh species palette would be adapted during installation based on nursery availability and project budget.
2 Quantities are approximate and may be refined during development of the wetland restoration area's

Table 7
Tecolote Creek 6.83-Acre Mid Salt Marsh Container Plant Palette[1]

Scientific Name	Common Name	Size	Average Spacing (feet on center)	Quantity (per acre)[2]	Quantity (total)[2]
Arthrocnemum subterminale	Parish's pickleweed	Rose pot/flats	4	1,449	9,093
Atriplex leucophylla	beach saltbush	Rose pot/flats	3	118	1,316
Batis maritima	saltwort	Rose pot/flats	4	190	1,192
Distichlis spicata	salt grass	Rose pot/flats	4	190	1,192
Frankenia salina	alkali heath	Rose pot/flats	4	252	1,581
Jaumea carnosa	fleshy Jaumea	Rose pot/flats	3	228	2,544
Salicornia pacifica	Pacific pickleweed	Rose pot/flats	4	190	1,192
Spartina foliosa	California cordgrass	Rose pot/flats	4	143	897
Suaeda taxifolia	woolly seablite	Rose pot/flats	3	101	1,127

Table 7
Tecolote Creek 6.83-Acre Mid Salt Marsh Container Plant Palette[1]

Scientific Name	Common Name	Size	Average Spacing (feet on center)	Quantity (per acre)[2]	Quantity (total)[2]
Triglochin concinna	seaside arrow-grass	Rose pot/flats	3	101	1,127
Total			—	**2,963**	**21,263**

Notes:
1 The mid salt marsh species palette would be adapted during installation based on nursery availability and project budget.
2 Quantities are approximate and may be refined during development of the wetland restoration area's

Table 8
Tecolote Creek 3.70-Acre High Salt Marsh Container Plant Palette[1]

Scientific Name	Common Name	Size	Average Spacing (feet on center)	Quantity (per acre)[2]	Quantity (total)[2]
Abronia maritima	red sand verbena	1 gallon	4	271	1,060
Abronia umbellata	beach sand verbena	1 gallon	4	271	1,060
Arthrocnemum subterminale	Parish's pickleweed	Rose pot/flats	4	819	3,204
Atriplex leucophylla	beach saltbush	Rose pot/flats	5	174	436
Distichlis spicata	salt grass	Rose pot/flats	4	271	1,060
Distichlis littoralis	shore grass	Rose pot/flats	4	133	520
Frankenia salina	alkali heath	Rose pot/flats	4	271	1,060
Jaumea carnosa	fleshy Jaumea	Rose pot/flats	4	138	540
Limonium californicum	western marsh-rosemary	Rose pot/flats	5	88	220
Suaeda taxifolia	woolly seablite	1 gallon	4	138	540

Table 8
Tecolote Creek 3.70-Acre High Salt Marsh Container Plant Palette[1]

Scientific Name	Common Name	Size	Average Spacing (feet on center)	Quantity (per acre)[2]	Quantity (total)[2]
		Total	**—**	**2,575**	**9,700**

Notes
1 The high salt marsh species palette would be adapted during installation based on nursery availability and project budget.
2 Quantities are approximate and may be refined during development of the wetland restoration areas

Table 9
Tecolote Creek 0.61-Acre Transitional Salt Marsh Container Plant Palette[1]

Scientific Name	Common Name	Size	Average Spacing (feet on center)	Quantity (per acre)[2]	Quantity (total)[2]
Abronia maritima	red sand verbena	1 gallon	4	272	154
Abronia umbellata	beach sand verbena	1 gallon	4	272	154
Ambrosia chamissonis	beach-bur	1 gallon	4	134	76
Arthrocnemum subterminale	Parish's pickleweed	Rose pot/flats	4	411	232
Atriplex leucophylla	beach saltbush	1 gallon	4	246	139
Caminssoniopsis cheiranthifolia	beach sun cup	1 gallon	4	411	232
Distichlis spicata	salt grass	Rose pot/flats	4	139	79
Distichlis littoralis	shore grass	Rose pot/flats	3	246	247
Frankenia salina	alkali heath	Rose pot/flats	4	277	157
Jaumea carnosa	fleshy Jaumea	Rose pot/flats	4	57	32
Limonium californicum	western marsh-rosemary	Rose pot/flats	4	139	79
Oenothera californica	California evening primrose	1 gallon	4	139	79
Peritoma arborea var.	coast bladderpod	1 gallon	4	139	79

Table 9
Tecolote Creek 0.61-Acre Transitional Salt Marsh Container Plant Palette[1]

Scientific Name	Common Name	Size	Average Spacing (feet on center)	Quantity (per acre)[2]	Quantity (total)[2]
arborea					
Suaeda taxifolia	woolly sea-blite	1 gallon	4	57	32
		Total	**—**	**2,938**	**1,769**

Notes:
1 The Transitional Salt Marsh species palette would be adapted during installation based on nursery availability and project budget,
2 Quantities are approximate and may be refined during development of the wetland restoration area's

Table 10
Tecolote Creek 2.53-Acre Southern Foredune Container Plant Palette[1]

Scientific Name	Common Name	Size	Average Spacing (feet on center)	Quantity (per acre)[2]	Quantity (total)[2]
Atriplex leucophylla	beach saltbush	1 gallon	8	525	344
Camissoniopsis cheiranthifolia	beach sun cup	1 gallon	4	1,050	2755
Peritoma arborea var. *arborea*	coast bladderpod	1 gallon	10	262	110
Suaeda taxifolia	woolly sea-blite	1 gallon	5	787	1322
		Total	**—**	**2,624**	**4,532**

Notes:
1 The Southern Foredune species palette would be adapted during installation based on nursery availability and project budget
2 Quantities are approximate and may be refined during development of the wetland restoration area's

All container plants would be checked for viability and general health upon arrival at the restoration area by the Project biologist. Plant materials not meeting acceptable standards of health as determined visually by the Project biologist would be rejected. Reasons for rejection of plant material may include being root-bound in the container, damaged foliage or stalks, diminutive stature, or signs of disease or pests.

Plant species and quantities would be confirmed by the Project biologist after delivery. Container plants would be laid out by the restoration contractor, and their placement verified and adjusted by the Project biologist.

Planting design and container plant layout would be randomly patterned (as opposed to rows) to create a natural patchiness that is typical within the target plant community. The restoration contractor would lay out container plants in groupings by species, ranging from three to six plants per grouping. Plant species that require more water would go into areas that are wetter and are located closer to the water table, and plant species that require less water would be placed in drier areas farther from the water table. The Project biologist would inspect the locations and adjust placement of groupings, if necessary.

Standard planting procedures would be employed for installing container plants. Holes would be approximately twice the width of the rootball of the plant and the same depth. If insufficient soil moisture is present, holes would be filled with water and allowed to drain immediately prior to planting. Container plants would be installed so that the rootball is below grade, with the crown 1 inch above grade. Plants would be thoroughly watered to settle backfill around the plant rootball.

7.3.5.2 Native Seed Application

The salt marsh and upland seed mixes shown in Tables 11 through 13 would be applied after initial container planting is complete. Labels for each seed delivered to the wetland restoration area would be inspected and approved by the Project biologist prior to mixing and application. Seed application would consist of hand broadcasting and raking into the soil. If some species are not available at the time of seeding, they may be acquired when available and hand broadcast at a later date.

Table 11
Tecolote Creek Salt Marsh Seed Mix

Scientific Name	Common Name	Rate (pounds per acre)	Minimum Percent Purity/Germination[1]	Pure Live Seed (square foot)
Anthrocnemum subterminale	Parish's pickleweed	4	TBD[2]	10[2]
Atriplex leucophylla	beach saltbush	1	80/40	0.54
Batis maritima	saltwort	2	TBD[2]	10[2]
Cressa truxillensis	alkali weed	2	10/70	0.16
Distichlis spicata	salt grass	2	80/80	18.90
Frankenia salina	alkali heath	3	3/70	73.25

Table 11
Tecolote Creek Salt Marsh Seed Mix

Scientific Name	Common Name	Rate (pounds per acre)	Minimum Percent Purity/Germination[1]	Pure Live Seed (square foot)
Jaumea carnosa	fleshy Jaumea	2	TBD[2]	10[2]
Salicornia pacifica	Pacific pickleweed	3	TBD[2]	10[2]
Spartina foliosa	California cord grass	1	TBD[2]	10[2]
Suaeda taxifolia	woolly sea-blite	1	30/20	2.96
Triglochin concinna	arrow grass	1	TBD[2]	10[2]
Total Pounds per Acre		**21**		**155.81**

Note: TBD = to be determined

1 Seed purity and germination can vary across collections. The purity and germination rates shown are typical of each species.

2 Species are not currently available. Seed to be collected and tested to obtain minimum percent purity/germination. This information would be provided in the As-built Report.

Table 12
Tecolote Creek Transitional Salt Marsh Seed Mix

Scientific Name	Common Name	Rate (pounds per acre)	Minimum Percent Purity/ Germination[a]	Pure Live Seed (square foot)
Abronia umbellata	beach sand verbena	1	75/20	0.06
Ambrosia chamissonis	beach-bur	1	90/55	0.45
Arthrocnemum subterminale	Parish's pickleweed	1	TBD[b]	10[b]
Atriplex leucophylla	beach saltbush	4	80/40	2.16
Camissoniopsis cheiranthifolia	beach sun cup	2	95/90	95.82
Cressa truxillensis	alkali weed	1	10/70	0.08
Distichlis spicata	salt grass	2	80/80	18.90
Distichlis littoralis	shore grass	2	TBD[b]	10[b]
Frankenia salina	alkali heath	2	3/70	48.83
Jaumea carnosa	fleshy Jaumea	2	TBD[b]	10[b]
Limonium californicum	western marsh-rosemary	2	60/30	3.06
Oenothera californica	California evening	1	TBD[b]	10[b]

Table 12
Tecolote Creek Transitional Salt Marsh Seed Mix

Scientific Name	Common Name	Rate (pounds per acre)	Minimum Percent Purity/ Germination[a]	Pure Live Seed (square foot)
	primrose			
Peritoma arborea var. *arborea*	coast bladderpod	1	98/45	0.04
Salicornia pacifica	Pacific pickleweed	1	TBD[b]	10[b]
Spartina foliosa	California cord grass	2	TBD[b]	10[b]
Suaeda taxifolia[c]	woolly sea-blite	1	30/20	2.96
Total Pounds per Acre		**26**	TBD[b]	222.36

Note: TBD = to be determined

[a] Seed purity and germination can vary across collections. The purity and germination rates shown are typical of each species.

[b] Species are not currently available. Seed to be collected and tested to obtain minimum percent purity/germination. This information would be provided in the As-built Report.

[C] This is a special status California Rare Plant Rank of category 4.2 plant species

Table 13
Tecolote Creek Southern Foredune Seed Mix

Scientific Name	Common Name	Rate (pounds per acre)	Minimum Percent Purity/ Germination[a]	Pure Live Seed (square foot)
Abronia maritima	red sand verbena	4	85/15	0.20
Abronia umbellata	beach sand verbena	4	75/20	0.24
Ambrosia chamissonis	beach-bur	4	90/55	1.80
Camissoniopsis cheiranthifolia	beach sun cup	4	95/90	191.64
Nemacaulis denudate var. *denudata*	coast woolly-heads	4	TBD[b]	10
Total Pounds per Acre		**20**	TBD[b]	203.88

Notes: TBD = to be determined

[a] Seed purity and germination can vary across collections. The purity and germination rates shown are typical of each species.

[b] Species are not currently available. Seed to be collected and tested to obtain minimum percent purity/germination. This information would be provided in the As-built Report.

All seeds would be clearly labeled showing type of seed, test date, the name of the supplier, and percentages of the following: pure seed, crop seed, inert matter, weed seed, noxious weeds, and total germination content. All material would be delivered to the wetland restoration area in original, unopened containers bearing the manufacturer's guaranteed analysis. All seed mixes would be stored in a dark, cool place and not be allowed to become damp.

Installation from October to the end of December is ideal for allowing establishment during the cooler and wetter time of the year. However, seed installation timing may be modified as directed by the Project biologist to avoid loss in storm flow events, or to take advantage of predicted rain events.

7.3.6 IRRIGATION SOURCE

Long term, the wetland restoration area would receive hydrologic inputs from tidal and surface waters flowing into the marsh from the storm drains. The initial need for temporary irrigation would be evaluated and determined upon review of site hydrology after site grading and establishment of the stormwater basin is complete. A temporary irrigation system may be installed within the upper portion of the project site near the outfall of Cudahy Creek and along the transitional perimeter of the restoration site that does not receive regular tidal inundation and/or in the event there is insufficient rainfall during the particular winter/spring wet season to support plantings and developing native vegetation communities.

During the 5-year maintenance and monitoring period for the wetland restoration area, a temporary aboveground irrigation system may be installed to water the plant installation locations and would be designed to supplement natural rainfall and tidal fluctuations to ensure survival of the container plantings. If a permanent water source is not available at the time the restoration plantings need to be implemented, then the irrigation system would be designed to be supplied by a water truck connected to an existing water source and water would be pumped onto the wetland restoration area and/or the site would be watered with trucked-in water and watered by hose.

All irrigation would be installed by the restoration contractor in accordance with this Plan and the final restoration construction documents. The irrigation system would be designed with aboveground components to facilitate removal once the system is decommissioned. Water sources and points of connection would be from on-site locations and use potable water.

The goal is to create native, self-sustaining plant communities. All temporary irrigation would be carried out by the restoration contractor under the direction of the project biologist. Irrigation

frequency and duration would be dependent on weather and plant conditions. During typical summer seasons, any time the weather is hot and dry for an extended period (a month or more), irrigation would be utilized three times per week for 30 minutes through year 3. During the fall and spring, Irrigation would be utilized twice a week for 30 minutes through year 3. During a very dry rainy season (typically November through March), irrigation would be utilized three times per week for 30 minutes. During a typical rainy season, irrigation would not be used unless the plants start to show stress, and then irrigation would be utilized in coordination with the biologist. The restoration area would be. non-irrigated for at least 2 years before the end of the 5-year maintenance and monitoring period. Habitat enhancement areas are not anticipated to be irrigated.

7.3.7 EROSION CONTROL BEST MANAGEMENT PRACTICES

Best management practices (BMPs) are schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention practices, educational practices, maintenance procedures, and other management practices designed to prevent or reduce, to the maximum extent practicable, the discharge of pollutants directly or indirectly into receiving waters. It is the responsibility of the property owner or his/her designee (contractor) to select, install, and maintain appropriate construction BMPs. BMPs are used to reduce the mobilization and transport of sediments from the wetland restoration area during initial implementation and during the maintenance and monitoring period. Suitable BMPs would be installed based on site conditions in accordance with most current City standards. Erosion control notes would be provided and/or a Water Pollution Control Plan would be prepared based on the document approval requirements.

7.3.8 WEED CONTROL

The contractor would cut and/or control existing non-native vegetation. Initial removal of plant species for site preparation would take place before any soil disturbances. To the maximum extent practicable, this Project should begin in the fall after the bird breeding season. Should any grading, grubbing, or removal of habitat take place during the breeding season, then a biological monitor would be required to ensure that impacts to nesting birds do not occur as a result of construction activities. As part of site preparation, dead thatch, deadwood, and other organic litter would be removed. It is assumed that there would not be any germination or growth of herbaceous weed species, but if there is, then weed control (hand pulling, mowing, or herbicide) would be conducted.

Table 14 shows potential non-native plant species that would be targeted during maintenance, as well as potential methods for removal and control.

Table 14
Weed Control and Treatment for Target Non-Native Plant Species

Weed Species		Potential Control Methods				
Botanical Name	*Common Name*	*De-thatch*	*Herbicide*	*Hand Pull*	*Weed Whip/ Mowing*	*Cut and Treat*
Atriplex semibaccata	Australian saltbush	X	X	X	X	
Avena barbata	slender oat grass	X	X	X	X	
Avena fatua	wild oat	X	X	X	X	
Brassica nigra	black mustard	X	X	X	X	
Bromus hordeaceus	softchess brome	X	X	X	X	
Bromus sp., *madritensis rubens*	brome grasses	X	X	X	X	
Cakile maritima	European sea rocket		X	X	X	
Carpobrotus chilensis	sea fig	X	X	X	X	
Cortaderia selloana	pampas grass		X		X	X
Cynodon dactylon	Bermuda grass	X	X	X	X	
Dittrichia graveolens	stinkwort			X		X
Emex spinosa	Devil's thorn		X	X	X	
Erodium botrys	broad leaf filaree	X	X	X	X	
Erodium cicutarium	stork's bill filaree	X	X	X	X	
Festuca perennis	Italian rye grass	X	X	X	X	
Helminthotheca echioides	bristly ox-tongue	X	X	X	X	
Lactuca serriola	prickly lettuce	X	X	X	X	
Mesembryanthemum crystallinum	crystalline ice plant	X	X	X	X	
Mesembryanthemum nodiflorum	slender-leaf iceplant	X	X	X		X
Nicotiana glauca	tree tobacco	X	X	X	X	
Parapholis incurva	sickle grass	X	X	X	X	
Plantago coronopus	cut leaf plantain	X	X	X	X	
Polypogon monspeliensis	rabbitsfoot grass	X	X	X	X	
Raphanus sativus	wild radish	X	X	X	X	
Rumex crispus	curly dock	X	X	X	X	
Salsola tragus	Russian thistle	X	X	X	X	

Table 14
Weed Control and Treatment for Target Non-Native Plant Species

Weed Species		Potential Control Methods				
Botanical Name	*Common Name*	*De-thatch*	*Herbicide*	*Hand Pull*	*Weed Whip/ Mowing*	*Cut and Treat*
Sonchus asper	spiny sowthistle	X	X	X	X	
Tamarix ramosissima	tamarisk		X	X		X
Cakile maritima	European sea rocket					
Emex spinosa	devil's thorn					

If weed seedlings are detected before planting and seeding occurs, the restoration contractor would remove all weeds. Areas to be seeded would be completely free of weeds and have only bare soil exposed at the time of seeding. Weed control would include hand-pulling of weeds, use of hand tools and/or weed whips, and/or foliar treatments of appropriate herbicides as determined by the Project biologist. Specific herbicide application rates and methods would be based on manufacturer specifications and would follow the general guidelines summarized below:

- Application methods would follow manufacturer specifications regarding application and safety procedures. Herbicide application would comply with state and local regulations. All application tasks would be performed by or under supervision of a licensed applicator with a Pest Control Business License issued by the State of California Department of Parks and Recreation and registered with the County Agricultural Commissioner.
- Chemical herbicides must be approved for use within wetland areas.
- Herbicide application would consist of spot applications to individual plants where weed coverage is sparse and broadcast applications where weed cover is dense. Applications should be uniform and complete. Contact with native species must be avoided; in the event of gusty winds or winds in excess of 5 miles per hour, application work would be temporarily discontinued to protect applicators and adjacent natural resources. Treatments would also be temporarily discontinued in the event of rainfall because rainfall reduces the effectiveness of herbicides.
- Sprayed vegetation would be left undisturbed for 7 days to allow the herbicide to be distributed throughout the entire plant. Visible effects of herbicide application consist of wilted foliage, brown foliage, and disintegrated root material.
- Excessive dead weed materials would be removed from the soil surface and disposed of.

7.3.9 AVOIDANCE AND MINIMIZATION MEASURES

Temporary fencing (with silt barriers) would be required at the limits of work for the wetland restoration area (including around the diversion ditch, staging areas, and access routes) to prevent inadvertent impacts to areas outside of the wetland restoration footprint.

Impacts from fugitive dust that may occur during filling and grading activities for the berm and restoration area would be avoided to the maximum extent practicable and minimized through watering and other appropriate measures.

The Project biologist would be on site to oversee installation of temporary fencing and any grading within 100 feet of existing waters of the United States to ensure permit compliance and to educate contractors on biological resources associated with the Project.

Equipment would be checked for leaks prior to operation and repaired as necessary. A spill kit for each piece of construction equipment would be on site and must be used in the event of a spill.

7.3.10 FENCING AND SIGNAGE

Perimeter fencing is proposed for the Project to restrict access and allow the site's vegetation time to develop and mature post-installation. Fencing would reduce the risk of damage to the salt marsh caused by foot traffic, animals, and unauthorized vehicular traffic. A 6-foot-high chain-link fence is assumed for this Project, although other exclusion fence types may be explored (e.g. split-rail); however, in accordance with the Mission Bay Park Master Plan Update, fences would not exceed 7 feet tall (City of San Diego 2002). Fence top rollers or other feral predator (e.g., cats, etc.) deterrents would be incorporated into the site protection fence. The existing chain-link fence that presently traverses the site would be removed during construction and a new one would be installed along the perimeter of the restored wetlands. Gates would be included to allow authorized access for monitoring and maintenance, and tours if desired.

Signage would be installed on the fencing at each end of the entrance/exit to the Fiesta Island causeway and the entry/exit areas closest to the pedestrian paths on the north and south sides of Tecolote Creek. The signs would include language identifying the site as a habitat restoration project, and that trespassing and access from unauthorized personnel are prohibited. In accordance with the Mission Bay Park Master Plan Update, regulatory signs should look specific to Mission Bay and be mounted on poles and bases particular to Mission Bay Park (City of San Diego 2002).

8 120-DAY PLANT ESTABLISHMENT PERIOD

During the first 120 days following completion of Project installation, the restoration contractor would be responsible for the health and mortality of the installed plant material. The Project biologist would visit the wetland restoration area at 30, 60, 90, and 120 days during this plant establishment period (PEP). Any plant disease, insect infestations, or herbivory would be remedied by the restoration contractor in consultation with the Project biologist/habitat restoration specialist and Project owner/proponent. If it is determined that protective plant cages or other protective measures are necessary, the Project owner/proponent would coordinate with the Project biologist/habitat restoration specialist and restoration contractor to find the most efficient and economical solution.

At the 90-day visit, the Project biologist would observe site conditions and seed germination and would provide a punch-list of replacement plants for the restoration contractor. Generally, plants would be recommended for in-kind replacement; however, the Project biologist may recommend alternative species if it is suspected that unsuitable growing conditions caused mortality.

Plants noted for replacement would be installed prior to the 120-day walk-through with the Project biologist. During the 120-day PEP, the restoration contractor is responsible for guaranteeing that the installed plant material would have a 100% survival rate. As part of the PEP, the contractor who performs the installation is contractually obligated to guarantee their work and to perform remedial measures to fix any observed problems before the 120-day PEP is considered complete and the Project transitions into the remainder of the 5-year maintenance and monitoring period. The following criteria must be met for the 120-day PEP to be considered successful:

1. Areas would be relatively free of weeds (California Invasive Plant Council rated species at 0% and less than 10% cover of all other weed species).
2. Areas free of debris.
3. No erosion or trash.
4. 100% survivorship of container plants.

A PEP maintenance schedule is shown in Table 15. As-needed work tasks would be conducted dependent on biological monitoring findings.

Table 15
Plant Establishment Period Maintenance Schedule

Work Task	1–30 Days	31–60 Days	61–90 Days	91–120 Days
Weed abatement	As-needed	As-needed	As-needed	As-needed
Plant replacement	As-needed	As-needed	As-needed	As-needed
Supplemental water	As-needed	As-needed	As-needed	As-needed
Erosion control	As-needed	As-needed	As-needed	As-needed
Non-weed pest control	As-needed	As-needed	As-needed	As-needed
Site cleanup and maintenance	As-needed	As-needed	As-needed	As-needed

9 MAINTENANCE PLAN

Maintenance activities would begin upon completion and approval of installation work. The restoration contractor's maintenance activities would be performed as indicated herein and as necessary to meet the established performance standards.

Trash and debris would be removed from the restoration area regularly during the 120-day PEP.

9.1 MAINTENANCE GUIDELINES

Following installation, site visits would be conducted monthly during Year 1 of the restoration and monitoring program. During Years 2 and 3, site visits would be conducted monthly December through April, and quarterly thereafter. During Years 4 and 5, site visits/monitoring would be conducted quarterly. More frequent monitoring would be conducted as needed to meet the performance standards indicated herein. A schedule is shown in Table 16.

Table 16
Maintenance Schedule

Task[1]	Year 1	Year 2	Year 3	Year 4	Year 5
Weed and pest control[2]	Monthly	Monthly (Dec–April); quarterly thereafter	Monthly (Dec–April); quarterly thereafter	Quarterly	Quarterly
Plant replacement[3]	Annually, Oct–Dec	Annually, Oct–Dec	Annually, Oct–Dec	As needed; Oct–Dec	As needed; Oct–Dec
Supplemental watering[4]	As needed	As needed	As needed	As needed	As needed
General site maintenance	Monthly	Monthly (Dec–April); quarterly thereafter	Monthly (Dec–April); quarterly thereafter	Quarterly	Quarterly
Erosion and sedimentation control	Monthly	Monthly (Dec–April); quarterly thereafter	Monthly (Dec–April); quarterly thereafter	Quarterly	Quarterly
Trash removal	Monthly	Monthly (Dec–April); quarterly thereafter	Monthly (Dec–April); quarterly thereafter	Quarterly	Quarterly

Table 16
Maintenance Schedule

Task[1]	Year 1	Year 2	Year 3	Year 4	Year 5
Fencing and signage maintenance	Monthly	Monthly (Dec–April); quarterly thereafter	Monthly (Dec–April); quarterly thereafter	Quarterly	Quarterly

Notes:

1 Maintenance task schedule and frequency would be adjusted, as appropriate, depending on site conditions and in coordination with the Project biologist. It is anticipated that more intensive maintenance would occur during the first few years of the Project and taper down as the Project approaches Year 5. Should any construction work be required to bring the wetland restoration area back to performance standards, construction work would take place outside of the City of San Diego's Beach Area Construction Moratorium (see Section 6.2.3, Preliminary Project Schedule).

2 Any maintenance performed during the bird nesting season (March 1 through September 15) would be conducted under the direction of the Project biologist.

3 Should extensive planting be required in Years 4 or 5, even due to unforeseen circumstances, the restoration and monitoring program may be required to be extended.

4 Performed as-needed during the first 3 years of the 5-year program, depending on site conditions. No supplemental watering would occur for the final 2 years of the maintenance and monitoring period.

9.1.1 WEED AND PEST CONTROL

Non-native plant control measures would include hand pulling, hand cutting, cutting with handheld mechanical devices, and/or application of approved herbicides. Hand removal of non-natives is the most desirable method of control and would be used within seeded areas where feasible. Weeds would be pulled when they can be positively identified, and prior to the formation of seed heads (see Table 16, Weed Control and Treatment for Target Non-Native Plant Species).

The maintenance contractor would coordinate with the Project biologist to identify weeds for removal. Chemical herbicide control would be used for perennial species that are difficult to control by hand pulling. Herbicide treatments must be pre-approved by the Project biologist and applied by a licensed or certified pest control applicator. The herbicide must be approved for use in wetland areas. Application of herbicide would be suspended should precipitation be expected to occur within 24 hours of application and/or if wind exceeds 6 miles per hour.

Plant pests would be controlled using integrated pest management techniques. Pests control would be performed by the restoration contractor using the least toxic method available, such as washing

pests off of plants with a strong stream of water, using insecticidal soap, or installing plant protection devices.

9.1.2 GENERAL SITE MAINTENANCE

Trash would be removed from the wetland restoration area by the contractor on a regular basis. Trash consists of all anthropogenic materials, equipment, and debris dumped, thrown, washed, blown, or left within the wetland restoration area.

Pruning or clearing of native vegetation would generally not be allowed within the wetland restoration area, except as directed by the Project biologist. Native dead biomass and plant litter would not be removed and would be left in place unless its removal is required for a specific management objective. Native organic biomass and leaf litter provide valuable microhabitats for benthic and terrestrial invertebrates, reptiles, small mammals, and birds. In addition, the decomposition of plant material is essential for the replenishment of soil nutrients and minerals. Fertilizers would not be used unless deemed necessary by the Project biologist to rectify a specific nutrient deficiency.

9.1.3 IRRIGATION SYSTEM MAINTENANCE

Contractor maintenance would include adjustment and repair of the temporary irrigation system. This may include repair or replacement of broken or malfunctioning components. Adjustment of the irrigation heads may be required to achieve 100% coverage. On the basis of monitoring observations, the Project biologist may make recommendations to the contractor to increase or decrease watering time or scheduling.

9.1.4 EROSION AND SEDIMENTATION

BMPs are not anticipated to be needed after vegetation has established in the wetland restoration area. However, temporary BMPs, such as burlap fiber rolls, silt fence, or burlap gravel bags, would be maintained for proper functioning until the site has reached Year 3 or until the Project biologist has deemed the BMPs unnecessary. Once the site is stabilized by native vegetation, the contractor would remove and dispose of temporary BMPs. If, after Year 3, there is active erosion or sedimentation within or directly adjacent to the Project site, the Project biologist would use the methods and protocols set forth under Section 11, Adaptive Management, of this Plan.

9.1.5 FENCE AND SIGNAGE MAINTENANCE

The location of gates and signage, and the language for the signage are included in the grading plans. Maintenance would include repair of Project gates and signage, and replacement as

needed. The contractor would confer with the Project biologist if it appears that maintenance needs of the wetland restoration area indicate that changes in the specified location, materials, or methods of fencing need to be altered to meet their intent for this Project and provide appropriate site delineation and protection.

10 ECOLOGICAL PERFORMANCE STANDARDS

10.1 VEGETATION PERFORMANCE STANDARDS

Monitoring would be conducted qualitatively and quantitatively by the Project biologist to determine if the wetland restoration area is meeting the established criteria. Table 19 summarizes the performance standards through Year 5. If the wetland restoration area fails to meet performance criteria in any given year, the Project biologist would recommend remedial actions to bring the wetland restoration area into a level of satisfactory establishment.

Native cover of the restoration area is expected to be 75% or greater relative to the reference site (see Section 9.2, Reference Site) by the end of Year 5, with native species richness of 5 or more, 1% or less absolute cover by general non-native species (such as annual weeds), and 0% absolute cover by perennial invasive species, as shown in Table 17. All non-native weed species would be controlled as part of the maintenance effort, including the high-ranked California Invasive Plant Council species. Quadrat data along the transects would be collected as absolute cover to capture density and strata overlap, which can also be converted to relative cover for overall vegetation composition comparison.

Table 17
Target Vegetation Percent Cover

Year	Native Species Richness[1]	Native Container Plant Percent Survival[2]	Minimum Percent Native Plant Cover (Relative to the Reference Site)[1,2]	Maximum Percent Total Non-Native Cover[1]	Maximum Percent Perennial Invasive and Cal-IPC Species
1	5	100	15	5	0
2	4	90	25	5	0
3	4	90	40	2	0
4	5	80	60	1	0
5	5	80	75	1	0

Notes"
Cal-IPC = California Invasive Plant Council.
1 Average of all quadrat data.
2 In-kind natural recruitment of native vegetation through seedling germination can serve to compensate for container plant mortality.

10.2 REFERENCE SITE

The Kendall-Frost Marsh Reserve would be utilized as the reference site (Figure 15) to compare to the wetland restoration area's site conditions. Kendall Frost is a successfully restored marsh located within the same watershed, containing similar elevations for low salt marsh and mid salt marsh areas, and includes a similar plant palette to the Project. Available vegetation data from the Kendall-Frost Marsh Reserve was analyzed from three transects to inform the plant palettes, seed mix, and performance standards included in this Plan. Due to the wide variability of species composition within the reference site, performance standards are provided for overall native vegetative cover. Any limitations for comparisons to the reference site would be provided in the annual monitoring reports. The reference site would be used to determine if progress at the wetland restoration area is consistent with the response of the reference site to prevailing weather and environmental conditions including sea level rise.

10.3 CALIFORNIA RAPID ASSESSMENT METHOD

The purpose of the California Rapid Assessment Method (CRAM) surveys for the wetland restoration area is to evaluate the wetland function and value of the ephemeral drainages (washes and braided channels), and to quantify improvement of these functions and values over time. CRAM metrics would be compared to previous CRAM surveys from this site over time and used to inform management decisions. Adaptive management strategies, if necessary, would be identified, prioritized, and implemented.

Application of CRAM to measure improvement in wetland quality can be an effective tool, but it has limitations. CRAM considers a wide variety of factors that influence the health of a wetland, and some attributes cannot be improved within the confines of a 5-year wetland restoration program. A wetland may show a small change in total CRAM score over time in spite of great change in general appearance. For example, Attribute 1 is very difficult to change because it considers influences within 500 meters of an assessment area, most of which may be outside the Project footprint. However, Attributes 3 and 4 can be greatly affected by decisions made during the design phase of the Project. Table 18 provides a summary of CRAM attributes, associated metrics, and feasibility for improvement in the context of this Project.

Table 18
Summary of CRAM Attributes and Metrics and Feasibility for Improvement

Attribute	Metric	What this Metric Measures	Anticipated Implementation Score	Ways to Improve the Score	Feasibility for this Project
Attribute 1: Buffer and Landscape Context	Aquatic Area Abundance	Spacial association with other areas of aquatic resources, such as other wetlands, lakes, and streams.	D	Increase the amount of wetland areas within 500 meters of the Project site.	Low. The wetland Project in association with other restoration projects is farther than 500 meters away.
	Buffer	Size and natural quality of the area within 250 meters.	D	Minimize proximity to pavement, closed fences, active rerestoration, and urbanized areas.	Low. The wetland restoration area area is within Mission Bay Park and rerestoration is one of the primary goals of the Improvement Zone. There is little opportunity to reduce infastructure within 250 meters of the wetland area.
Attribute 2: Hydrology	Water Source	Natural quality of hydrologic inputs that affect the dry-season condition of the area within 2 kilometers.	C–D	Remove storm drains.	Low. It is not a goal of this wetland restoration to remove the storm drains, but rather to improve the water quality of the runoff coming from the storm drains.
	Hydroperiod	The characteristic frequency and duration of	B–C	Remove the berm to remove the human-caused alterations	Low. It is not the intent of this wetland restoration to remove the berm, but rather

Table 18
Summary of CRAM Attributes and Metrics and Feasibility for Improvement

Attribute	Metric	What this Metric Measures	Anticipated Implementation Score	Ways to Improve the Score	Feasibility for this Project
		inundation or saturation of the wetland during a typical year.		and/or modify the berm to allow for two daily tidal minima and maxima levels.	to build a berm in order to increase the residence time for water to drain to improve water quality.
	Hydrologic Connectivity	The ability for water to flow into or out of the wetland.	B	Allow for rising water in the wetland to have unrestricted access to adjacent areas.	Moderate at time of restoration. Low for change over 5-year mitigaiton period. Project design incorperates a sea-level rise analysis through the year 2100 (up to 7 feet) and a 100-year storm event.
Attribute 3: Physical Structure	Patch Richness	Diversity of physical surfaces and features.	D	Add woody debris; shellfish beds, pools, or depressions within the subtidal channels; and add pools or pannes within the Project site.	High at time of restoration. Moderate for change over 5-year restoration period.
	Topographic Complexity	Quality and diversity of elevation changes.	C–D	Construct subtidal channels with adjacent floodplain and upland bench;	High at time of restoration. Moderate for change over 5-year restoration period.

Table 18
Summary of CRAM Attributes and Metrics and Feasibility for Improvement

Attribute	Metric	What this Metric Measures	Anticipated Implementation Score	Ways to Improve the Score	Feasibility for this Project
				create an uneven gradient and include partially burried debris.	
Attribute 4: Biotic Structure	Plant Composition	Diversity of native plant species and plant heights; low cover from non-native invasive species.	D	Install/seed a wide variety of species of various heights; eliminate non-native invasive species.	Moderate to High.
	Horizontal Interspersion	Number and distribution of distinct plant groupings.	D	Install/seed species in distinct associations; avoid uniform application.	Moderate to High.
	Vertical Structure	Number of overlapping plant layers.	D	Install/seed species of various heights.	Moderate to High.

Note:
CRAM = California Rapid Assessment Method.

CRAM scores would be used to evaluate the form and function of the wetland restoration area When compared to the baseline conditions, the results of Years 1, 3, and 5 CRAM surveys should show the following, at a minimum:

- Physical form and structure that are suitable for tidal and stormwater flow and conveyance.
- Development of hydrologic features within the subtidal channels and greater wetland area that provide evidence of expected function.
- Continued improvement in biotic structure (improved score in Attribute 4).
- Overall trajectory toward improved rather than degraded condition (improved scores in Attributes 3 and 4).
- Overall increase in CRAM score.

10.4 JURISDICTIONAL EVALUATION AT THE END OF YEAR 5

At the end of Year 5, an evaluation of the dominance of wetland vegetation throughout the site would be conducted, using the "Vegetation" portion of the Wetland Determination Data Form – Arid West Region. The results of this exercise must achieve a Prevalence Index Score of less than or equal to 3. Results would be included in the Year 5 Annual Report.

11 MONITORING AND REPORTING PLAN

The Project biologist would perform monitoring of the wetland restoration area during implementation through Year 5 to ensure that the restoration program requirements are adhered to, to document the restoration effort and progress toward the annual performance standards, and to ensure that site maintenance is being adequately performed by the maintenance contractor.

Monitoring would consist of qualitative monitoring, a functional assessment using CRAM, and quantitative (quadrat) monitoring.

11.1 MONITORING AND REPORTING SCHEDULE

Monitoring would consist of monthly qualitative site visits for the 120-day PEP period and throughout Year 1, monthly monitoring from January- April and quarterly during May-December for Years 2 and 3, and quarterly monitoring for Years 4 and 5. Monitoring would also consist of CRAM assessments in Years 1, 3, and 5 (Table 19). Qualitative monitoring would be conducted by the Project biologist to determine if the site is on trajectory to meet the annual performance standards. If restoration efforts fail to meet the performance standards in any given year, the Project biologist would recommend remedial actions to bring the site into alignment with the performance standards.

Table 19
Monitoring and Reporting Schedule

Task	120-Day PEP	Year 1	Year 2	Year 3	Year 4	Year 5
Qualitative Monitoring	At 30-, 60-, 90-, and 120-day PEP	Monthly	Monthly (Dec–April); quarterly thereafter	Monthly (Dec–April); quarterly thereafter	Quarterly	Quarterly
CRAM Monitoring	Post-implementation (baseline conditions)	Year 1 in fall/winter	N/A	Once in fall/winter	N/A	Once in fall/winter
Quadrat Data	N/A	N/A	Annually in fall	Annually in fall	Annually in fall	Annually in fall
Reporting	As-built (implementation); Site Observation Reports (monthly); 120-day PEP	Site Observation Reports (Monthly) Annual Reports [a]	Site Observation Reports (Monthly (Dec–April); Quarterly thereafter)	Site Observation Reports (Monthly (Dec–April); Quarterly thereafter) Annual Reports [a]	Site Observation Reports (Quarterly) Annual Reports [a]	Site Observation Reports (Quarterly) Annual Reports [a]

Notes: PEP = plant establishment period; CRAM = California Rapid Assessment Method; N/A = not applicable

[a] Timing would be based on the lead agency requirement once permits are obtained.

11.2 AS-BUILT REPORT

Prior to implementation, photo points would be selected and photos of the Project and reference site taken. These photo points would coincide with the transect sampling areas and serve as photographic evidence for the wetland restoration area.

Within 45 days of successful completion of the installation of the native container plants or hydroseed (whichever is later), the Project biologist would submit a post-installation memorandum to the City and applicable regulatory agencies documenting the completion of the grading, plant and seed installation, and weed removal of the installation phase and describing the as-built conditions of the wetland restoration area. The report would include a copy of the reduced set of construction drawings and a figure showing the final as-built limits of the wetland restoration area. Photographs would be included in the "as-built" report to document the site at the completion of the initial phase of implementation. The post-installation memorandum would include the following:

- Date(s) work within waters of the United States and waters of the state were initiated and completed.
- Summary of compliance status for each regulatory agency permit condition.
- Color photographs (including maps of photo points) taken at the wetland restoration area before and after installation work.
- One copy of the as-built drawings for the entire wetland restoration area.
- Schedule for future wetland restoration area monitoring and reporting.

11.3 120-DAY PLANT ESTABLISHMENT PERIOD AND REPORT

The initial survival of the native plants installed within the wetland restoration area would be evaluated after a 120-day PEP. The PEP would start after planting is completed and conclude after 120 days and upon the acceptance of successful establishment of the wetland restoration area by the City.

The contractor would be responsible for the health and mortality of the installed plant material. The Project biologist would visit the wetland restoration area at 30, 60, 90, and 120 days during the PEP. The Project biologist would coordinate with the restoration contractor to replace any native plants that have died during the PEP. Generally, plants would be recommended for in-kind replacement; however, the Project biologist may recommend alternative species if it is suspected that unsuitable growing conditions caused mortality. Plants noted for replacement would be installed prior to the 120-day walk-through with the Project biologist. Plants must be in the ground at least 30 days prior to completion of the PEP.

The following criteria must be met for the 120-day PEP to be considered successful and the results would be documented in the 120-day PEP report:

- All target exotics removed or killed in place.
- Areas free of debris and trash.
- Areas free of erosion.
- 100% survivorship of container plants.

The 5-year maintenance and monitoring program would begin after the 120-day PEP has been accepted. Maintenance activities would be conducted concurrent with the installation, would continue throughout the initial PEP, and would conclude at the end of the 5-year maintenance and monitoring period.

11.4 QUALITATIVE MONITORING

Qualitative monitoring would include assessment of the overall conditions of the rehabilitated non-wetland waters and the wetland restoration area. The conditions to be assessed qualitatively include visual evaluation of hydraulic functions and conditions if present, evidence of surface hydrology via active storm or post-storm flow if present, number and type of hydric soil indicators if present, plant health, need for replacement planting, plant pests, wildlife usage, level of non-native plant infestation, and need for trash removal. Any recommended remedial measures would be reported to the project/owner and maintenance contractor for immediate consideration and implementation.

Following each site visit, the Project biologist would generate a brief Site Observation Report indicating the condition of the site and any maintenance and/or remedial actions needed to help ensure the Project meets its annual performance goals. Although no focused wildlife surveys would be conducted, wildlife usage would be documented. Copies of the Site Observation Report would be provided to the City and the restoration contractor.

11.5 QUANTITATIVE MONITORING

Quantitative data collection would occur once annually in the spring during Years 2–5. Data on percent native species cover, non-native species cover, and bare ground would be collected and summarized in the annual reports. Quadrat data collection locations would be established in the salt marsh area along five permanent 50-meter transect lines (25-meter transect lines may be used if the area is too small to allow for 50-meter transect lines). A 1-square-meter quadrat would be sampled at each 5-meter interval along each permanent transect line, alternating sides of the transect. At the start of each transect, the quadrat would be placed on the right side of the transect at meter 0. The

location within the marsh strata (low salt marsh, transitional salt marsh, or mid salt marsh) would be documented for each quadrat.

Overall count of native plant species present within the restoration area would be documented to reflected species richness. Percent cover of all plant species, all non-native plant species, and bare ground would be estimated to the nearest 1% for each quadrat. An overall average would be calculated for each transect. Transects would be photo-documented at the time of data collection and georeferenced using GPS. A total of 500 quadrat samples would be collected.

Permanent photo-documentation points would be established at key locations to visually document progress of the wetland restoration area. The Project biologist would establish permanent photo points prior to Project implementation and provide them on a site map for future reference. Photos would be taken at milestone events during installation and annually through the long-term monitoring phase of the Project. Permanent photo-documentation points would also be established along each transect to record the progress of quantitative data collection over the 5-year period. Additionally, photographs would be taken of any significant management issues and biological observations, including photographs of changing conditions within the wetland restoration area. Photos from photo-documentation points and mapped locations would be included in the annual reports.

11.6 CALIFORNIA RAPID ASSESSMENT METHOD

A post-implementation CRAM survey would be conducted to document the baseline conditions of the wetland restoration area (i.e., the created ephemeral drainages). All CRAM surveys would be conducted by trained CRAM practitioners and would follow the approved methodologies for the CRAM Estuarine Module (CWMW 2013; field book Version 6.1or most current; datasheet Version 6.1 or most current). Results of the CRAM surveys would be included in the annual reports for Years 1, 3, and 5 and entered into the CRAM online database.

The purpose of CRAM surveys for the wetland restoration area is to evaluate the wetland function and values and to quantify improvement of these functions and values during the monitoring period.

CRAM surveys would be conducted for the as-built (baseline) condition, Year 3, and Year 5. The as-built survey would be conducted directly after construction of the drainages and prior to the start of the 5-year monitoring period. Subsequent surveys would be conducted during Years 3 and 5 of the monitoring periods. Results of CRAM surveys would be reported in the as-built report and Year 3 and Year 5 annual reports. The CRAM scores in Years 3 and 5 would be compared to baseline scores to evaluate how the wetland functions and values improved during the monitoring period.

Per CRAM protocol, each CRAM survey would be conducted for one assessment area (AA) recommended to be a 56-meter (approximate) circle, but the shape can be non-circular, if necessary, to fit the wetland and meet hydromorphic criteria. The recommended minimum size is 30 meters by 30 meters.

Establishment of the AAs would occur during the initial survey (i.e., the pre-CRAM survey) per CRAM protocol. Subsequent surveys (implementation and Years 3 and 5) would be conducted within these same AAs.

The Estuarine Module requires the collection of information on the AA that includes the surrounding landscape (Attribute 1: Buffer and Landscape Context), aquatic area abundance and buffer (Attribute 2: Hydrology), water source, hydroperiod, and hydrologic connectivity (Attribute 3: Physical Structure), structural patch richness and topographic complexity, and Attribute 4: Biotic Structure) plant community compositions, horizontal interspersion, and vertical biotic structure. Each attribute is scored individually and then used to calculate the final CRAM score. Potential environmental "stressors" are noted for the AA, but do not factor into the total CRAM score.

11.7 ANNUAL MONITORING REPORTS

A biological monitoring report summarizing the progress of the wetland restoration area would be submitted to the City and applicable agencies annually following completion of all installation work. In the event that permits obtained by wildlife agencies (401/404/1602/BO etc.) require additional monitoring or reporting tasks, then one report would include all of the required items of each agency. The submittal timing of the lead agency would take precedence. If no as-built report is required for the wetland restoration area, then the first annual report would include a discussion of the as-built conditions according to the grading plan and any minor changes that occurred to the grading plans would be red lined and included as an attachment. Each annual report would document the condition of the wetland restoration area and include photographs taken from the same fixed points in the same directions. Annual reports would identify any shortcomings of the restoration program and recommend remedial measures, if necessary, for the successful completion of the wetland restoration.

12 ADAPTIVE MANAGEMENT

Adaptive management is defined as a flexible, iterative approach to the long-term management of biological resources that is directed over time by the results of ongoing monitoring activities and direct observation of environmental stressors that are producing adverse results within the wetland restoration area.

An integral part of a successful wetland restoration area is early detection of problems, determining the cause(s) of those problems, and attempting to correct those problems so that the wetland restoration area achieves its objectives and ecological performance standards. If annual performance guidelines are not met for any given year in the 5-year restoration period and/or if the Project experiences a significant unexpected problem, the Project biologist would prepare an analysis of the cause(s) of failure and would propose remedial actions in the annual report.

Adaptive management measures would use qualitative data gathered in the field prior to and throughout the monitoring period to assess the aquatic functions and values, the effects of weeding maintenance, and the status of seed germination and cover within the wetland restoration area. Following an event that causes damage to all or part of the wetland restoration area, this data would be used to drive management considerations for the repair of the damaged areas. Achieving the key goals of the restoration program and establishing a naturally functioning aquatic resource would be the focus of all adaptive management decisions.

If determined necessary, the Project biologist, in consultation with the City, would notify the regulatory agencies and prepare an analysis of the Project's problems and propose remedial actions to correct the problems in order to meet the performance standards and success criteria at the end of the 5-year maintenance and monitoring period. The maintenance and monitoring obligations would continue and/or alternative contingency measures and interim performance standards would be negotiated until the regulatory agencies give final permit compliance/approval or approval for alternative compensation measures. Individual environmental stressors are discussed below, along with an anticipated range of management responses to correct any damage that may occur to the wetland restoration area.

12.1 DROUGHT

Seasonal drought is a normal annual cycle in San Diego County. Periods of extended drought could occur, including low seasonal rainfall and prolonged high temperatures that may negatively affect the wetland restoration area (e.g., lower native cover, higher plant mortality, increased potential for pest infestations on site). If drought conditions limit native vegetation development, an additional

seed application may be considered to replenish the native seed bank to allow the site to respond normally in the event of renewed rainfall and/or flooding.

12.2 HERBIVORY

Some grazing and browsing by native herbivores is expected to occur within the wetland restoration area. The plant palettes for each vegetation community have been designed to tolerate a moderate level of plant browsing. If browsing levels should become elevated (i.e., if significant plant mortality and cover reduction occurs) as indicated by qualitative monitoring, remedial measures would be implemented. Browse guards (e.g., plastic fencing/wire cages) may be installed around the base of trees and young shrub plants in affected areas to reduce plant mortality. In addition, remedial planting or seeding may be necessary, depending on the stage of the Project.

12.3 ADVERSE HYDROLOGIC CHANGES

Tidal marshes are dynamic systems that can experience topographic modification due to tidal fluctuations. In addition, this site has two storm drain outlets that can affect topographic modification from storm flow and flood events. It is expected that sediment would be deposited and exported from the wetland restoration area during especially high tides and flood events. If elevations within the wetland restoration area change in such a way that would compromise the success of the Project (such as excessive aggradation, degradation, and/or sea-level rise), localized grading, thin-layer sediment additions, recontouring, and/or re-planting may be necessary for the Project to achieve success. In the event of adverse hydrologic and/or topographic changes affecting the wetland restoration area, the Project biologist would assess the conditions and provide adaptive management recommendations to the City and regulatory agencies, including weed-free BMPs such as burlap-encased straw wattles, fiber rolls, or burlap gravel bags, and/or additional grading.

12.4 FIRE

San Diego County experiences periodic wildfires. Although the restoration area is on the coast and within a park setting, there is still potential for a fire to affect the site. In the absence of non-native weed cover, particularly non-native grasses, there would be a very low chance of fire to carry through the wetland restoration area. Should weeds be allowed to persist, the fire threat would increase. Therefore, weed management would be an important factor in keeping this environmental stressor to a minimum.

Fire presents the possibility for faster-growing, early successional non-natives to out-compete recovering native species. In the event of fire affecting the wetland restoration area, the Project biologist would assess the post-fire conditions and provide adaptive management recommendations, including an increase in weed control.

13 FINANCIAL ASSURANCES

The City is the owner and permittee of the Project and is financially responsible for implementation and management of the wetland restoration area. Proposition C, which amended the City Charter by adding Section 55.2, designates the use of a portion of the lease revenue from Mission Bay Park for capital improvements in Mission Bay Park and for other regional parks. This fund is known as the Mission Bay Park Improvement Fund and would be used to fund this wetland restoration.

To determine a cost estimate for this wetland restoration area, unit costs were derived from the City of San Diego Unit Price List and similar project cost estimates. Costs associated with the Fiesta Island Causeway are excluded. A separate temporary pipe connection through the causeway may be installed to establish tidal flow to the wetland restoration area in lieu of the completed causeway tidal connection if the Tecolote Creek wetlands restoration project precedes the causeway project. The preliminary estimated construction cost of the preliminary design is shown in Table 20.

Table 20
Preliminary Estimate of Construction Cost

Item	Unit	Quantity Total	Unit Price	Cost
Mobilization of Equipment	LS	1	$50,000	$50,000
Earthwork and Stockpiling	CY	169,220	$25	$4,230,500
Irrigation and Planting, Plus 1 Year of Plant Establishment	AC	17	$118,000	$2,008,360
Temporary 24” pipe culvert	LF	120	$1,000	$120,000
Perimeter Fence (6-Foot Tall Chain-Link)	LF	3,393	$20	$67,860
Swing Gates (West and East Perimeters)	EA	2	$1,000	$2,000
Demobilization	LS	1	$50,000	$50,000
Field Office	LS	1	$10,000	$10,000
Subtotal Construction Cost	—	—	—	*$6,538,720*
Contingency (30% of Total Construction Cost)	—	—	—	*$1,961,616*
			Total Construction Cost	**$8,500,336**

Note:
LS = lump sum; CY = cubic yards; AC = acres; SF = square feet; LF = linear feet; EA = each

The planning and design cost estimate is based on 15% of the total construction costs. The environmental permitting cost is based on 5% of the total construction costs (Appendix A). The total preliminary estimated cost of the Project's preliminary design is shown in Table 21.

Table 21
Preliminary Design Estimated Cost

Item	Cost
Total Construction Cost (see Table 22)	$8,500,336
Planning and Design (15% of Construction Cost)	$1,275,050
Environmental Permitting (5% of Construction Cost)	$425,017
Total	**$10,200,403**

14 COMPLETION OF RESTORATION

14.1 NOTIFICATION OF COMPLETION

At the end of Year 5, the final annual monitoring report would be submitted to the regulatory agencies, including an evaluation of restoration program success. The report would make a determination of whether the requirements and performance standards of the restoration program have been achieved. Successful restoration would be achieved when the wetland restoration area is self-sustaining without supplemental irrigation or any substantial remedial activities for a minimum of 2 years prior to sign-off. Following attainment of final performance standards, vegetation mapping would be conducted to document post-Project site conditions and included in the final annual report. At the request of the regulatory agencies, a formal jurisdictional wetland delineation may be performed to assist in determination of the Project's fulfillment of its intent.

At the conclusion of the 5-year maintenance and monitoring period, or at such time that the Project has achieved the performance standards, the Project biologist would inform the applicant and regulatory agencies and request final approval. A site review would be scheduled for all interested parties to review the wetland restoration area to confirm final conditions. Upon verbal and/or preferably written confirmation of Project success by the regulatory agencies, the regulatory agencies would release the City from all obligations associated with the 5-year maintenance and monitoring program.

Following the maintenance and monitoring period, construction BMPs and any temporary fencing would be removed.

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15 LONG TERM MANAGMENT ELEMENT

This Restoration site would be managed long-term by the Parks and Recreation Department in accordance with the MSCP Subarea Plan and/or a Long-Term Habitat Management Plan, and consistent with future update to the Mission Bay Park Natural Resources Management Plan (NRMP).

Prior to subsequent project-level approval and as part of the project-specific environmental review pursuant to CEQA, the conceptual habitat restoration and monitoring plan would be updated to reflect specific site protection, long term habitat management, and long-term habitat management funding mechanism.

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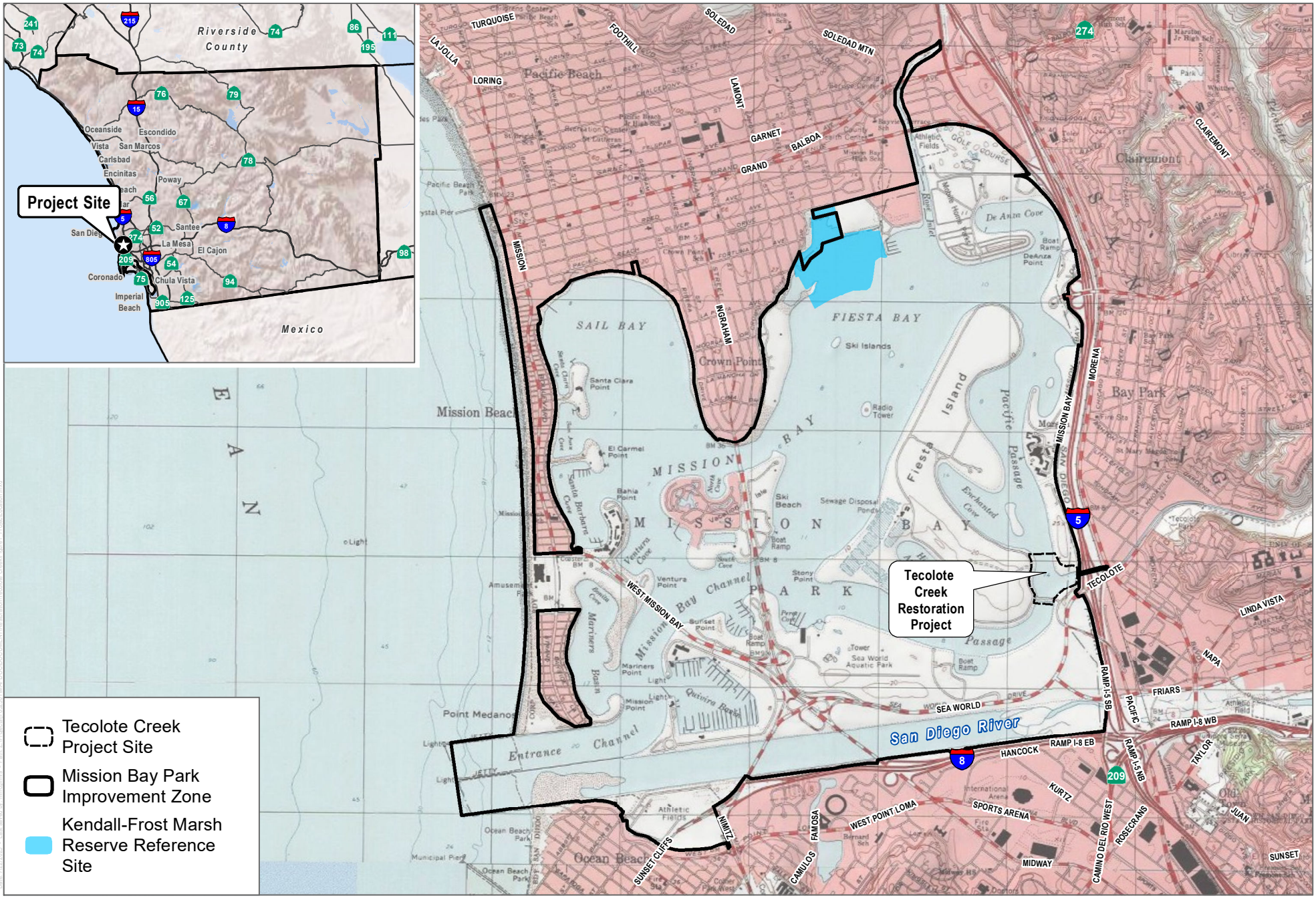

SOURCE: USGS 7.5-minute La Jolla Quadrangle

DUDEK

0 1,650 3,300 Feet

FIGURE 1

Project Location

Tecolote Creek Wetlands Restoration Project Conceptual Habitat Restoration and Monitoring Plan

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SOURCE: ESRI 2024; City of San Diego 2018

DUDEK

0 425 850 Feet

FIGURE 2

Project Site

Tecolote Creek Wetlands Restoration Project Conceptual Habitat Restoration and Monitoring Plan

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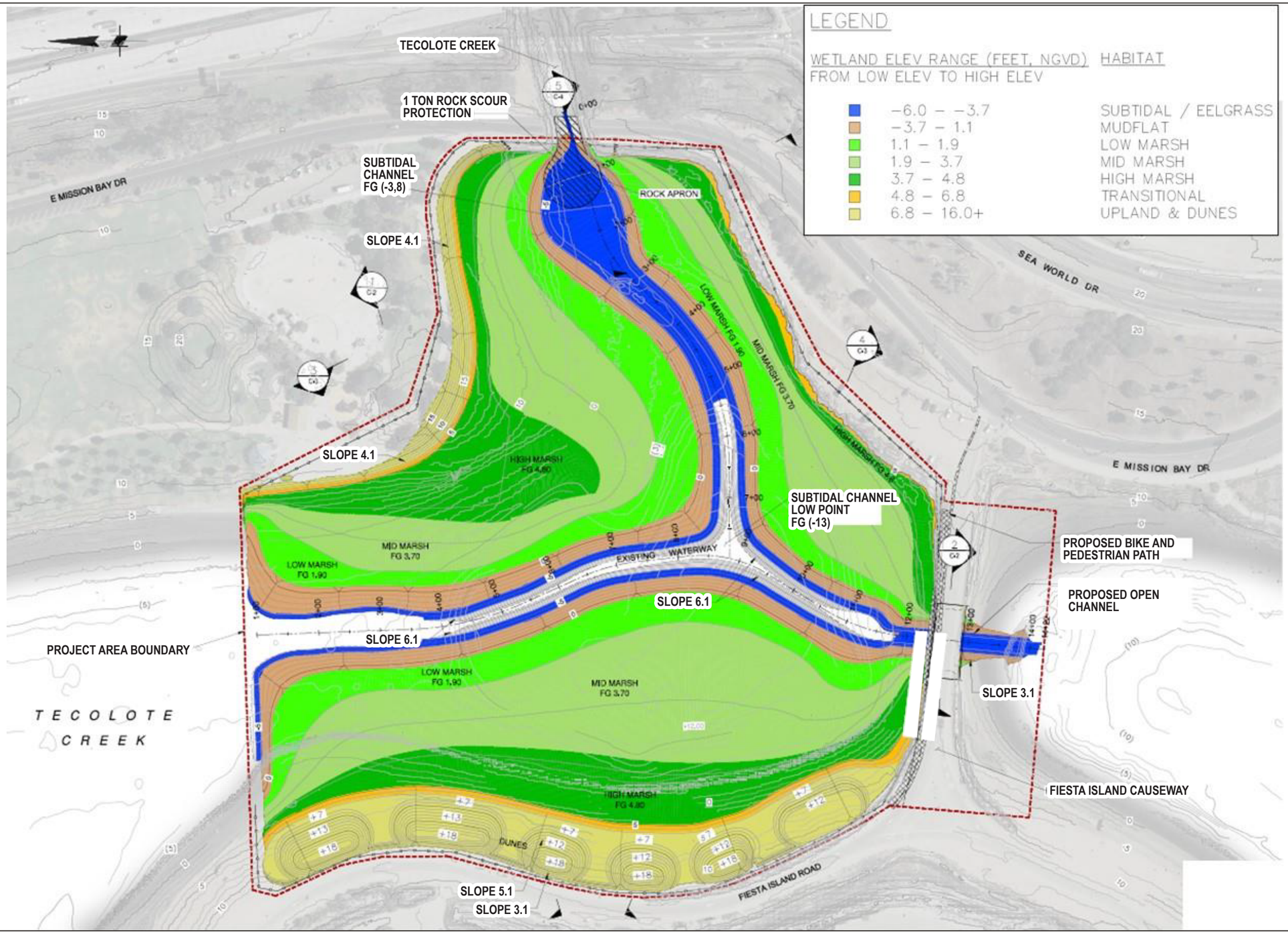

SOURCE: Moffatt & Nichol. 2021. Preliminary Engineering Report Tecolote Creek Wetland Restoration & Fiesta Island Causeway

FIGURE 3

Conceptual Site Plan

TTecolote Creek Wetlands Restoration Project Conceptual Habitat Restoration and Monitoring Plan

DUDEK

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SOURCE: SANGIS 2023; City of San Diego 2018

DUDEK

0 110 220 Feet

FIGURE 4

Impacts to Jurisdictional Resources

Tecolote Creek Wetlands Restoration Project Conceptual Habitat Restoration and Monitoring Plan

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Aerial View of Mission Beach and False Bay – 1930 (www.sandiego.gov)

False Bay was historically unnavigable as the channels were narrow and shallow. The City began dredging in 1946 to create Mission Bay Park. Dredging operations, and subsequent land creation with dredged and upland material, occurred between 1946 and 1956, 1959 and 1961, and 1963 and 1964 to create the current configuration of Mission Bay. Landforms, such as Fiesta Island, were formed with what is geologically described as Artificial Fill. This Artificial Fill consists primarily of loose to medium dense silty sands with intermittent layers of soft clay.

SOURCE: RICK ENGINEERING, 2019

FIGURE 5

Historic Aerial Photo

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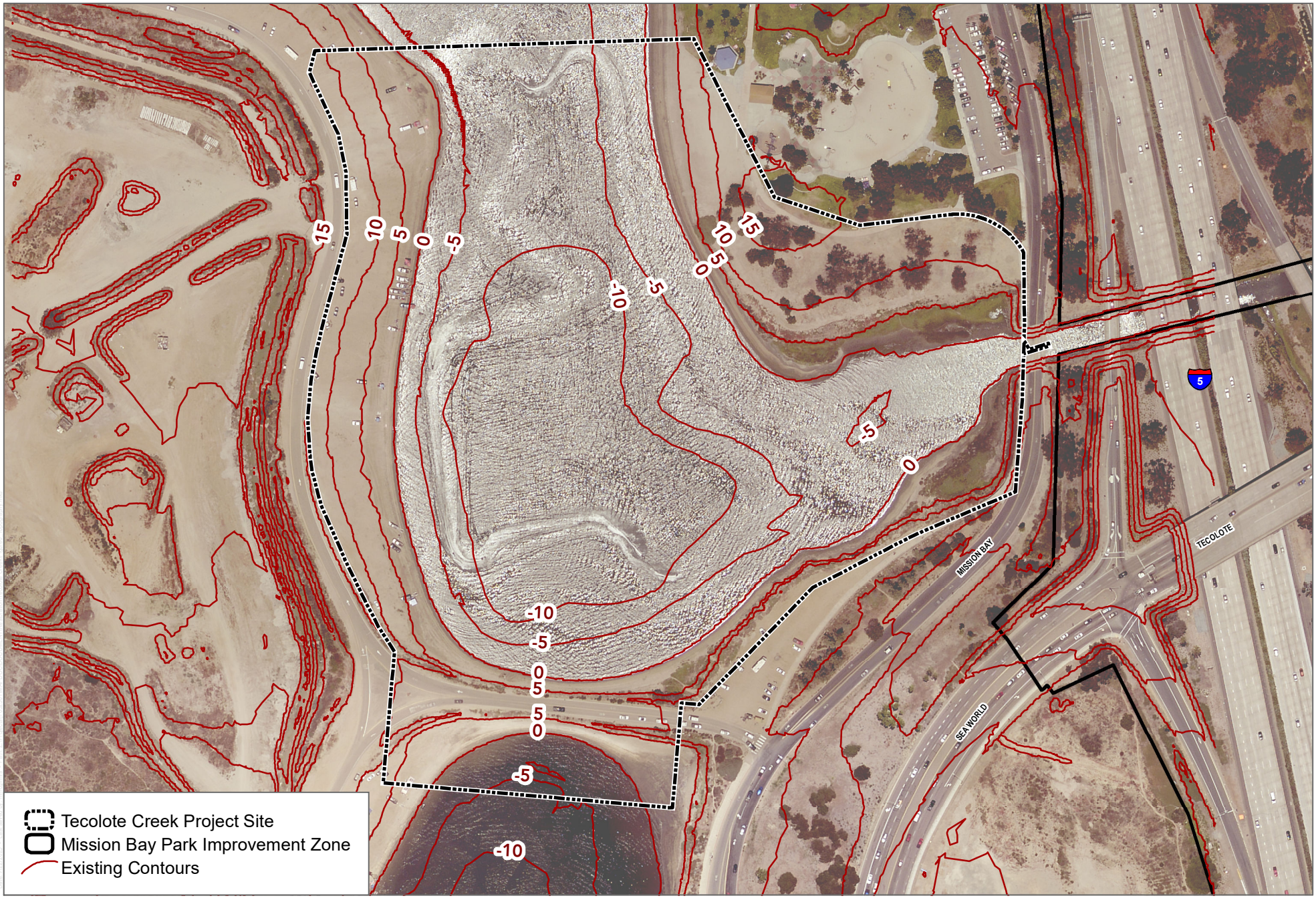

SOURCE: SANGIS 2017; MOFFAT NICHOL 2021

DUDEK

0 110 220 Feet

FIGURE 6

Topography

Tecolote Creek Wetlands Restoration Project Conceptual Habitat Restoration and Monitoring Plan

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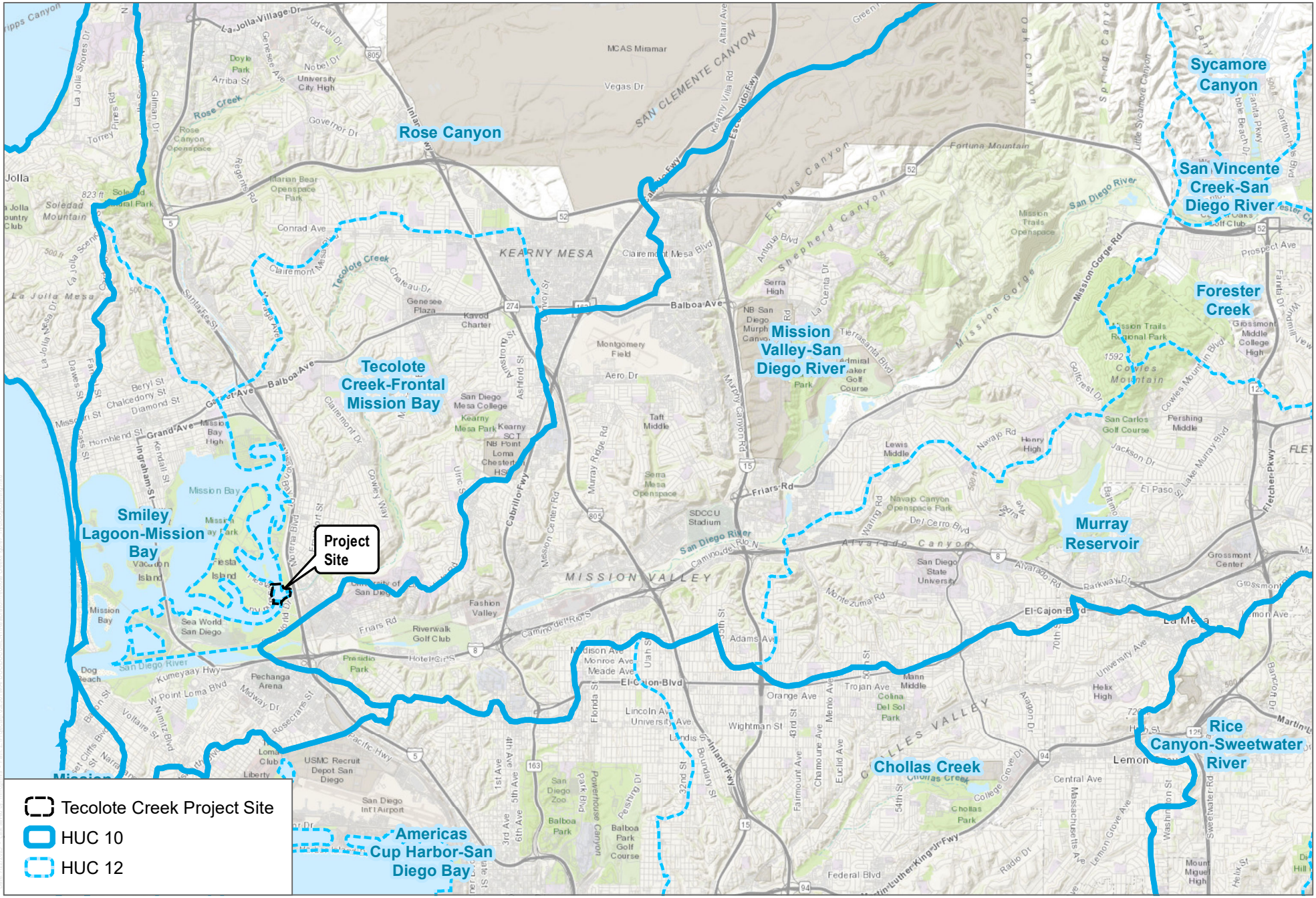

SOURCE: SANGIS 2017; USGS 2018; MOFFAT NICHOL 2021

DUDEK

0 4,125 8,250 Feet

FIGURE 7

Hydrologic Setting

Tecolote Creek Wetlands Restoration Project Conceptual Habitat Restoration and Monitoring Plan

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SOURCE: MOFFATT & NICHOL 2021

FIGURE 8

Project Area Outfalls and Storm Drain System

Tecolote Creek Wetlands Restoration Project Conceptual Habitat Restoration and Monitoring Plan

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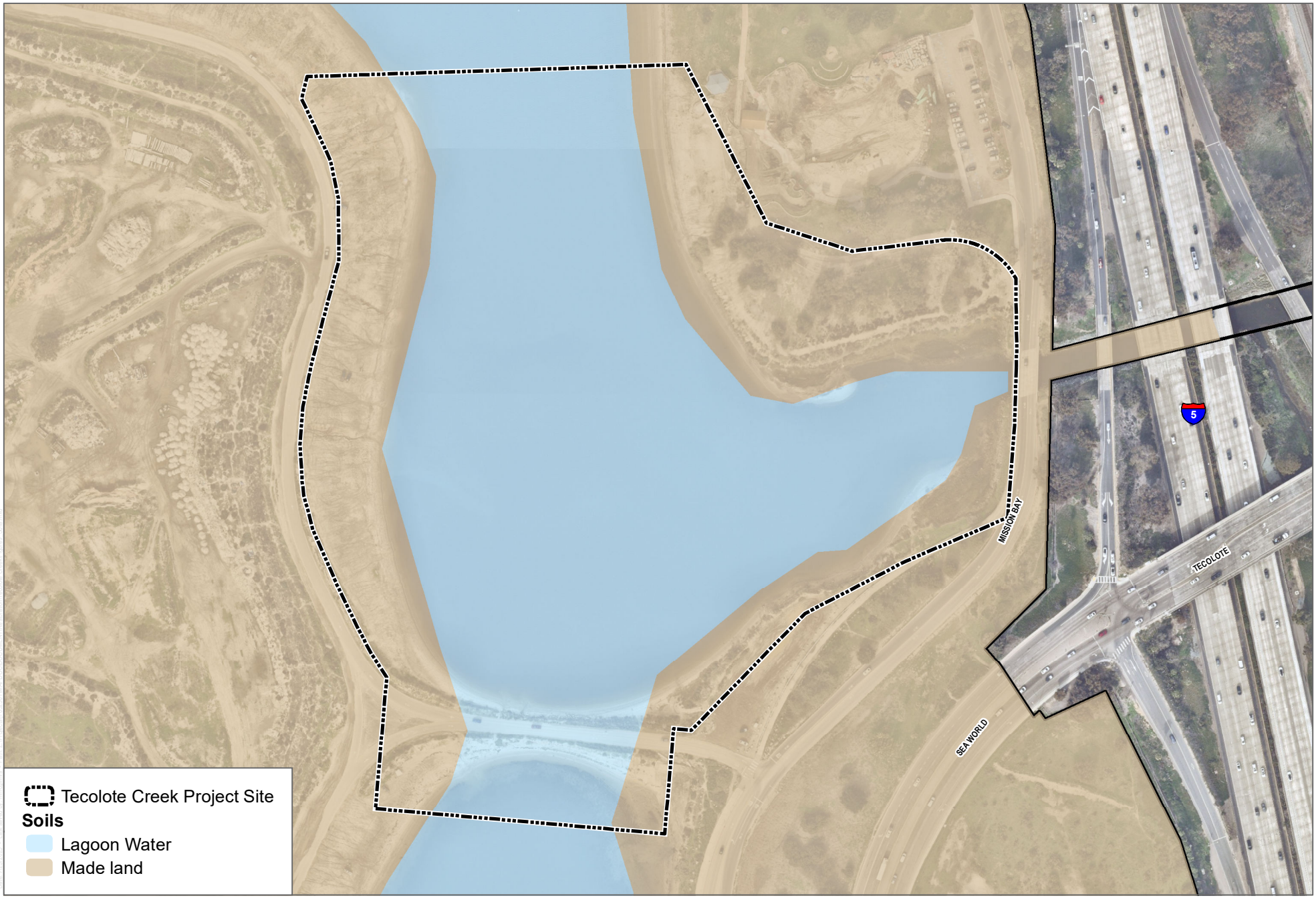

SOURCE: SANGIS 2023; USDA 2018; MOFFAT NICHOL 2021

DUDEK

0 110 220 Feet

FIGURE 9

Soils

Tecolote Creek Wetlands Restoration Project Conceptual Habitat Restoration and Monitoring Plan

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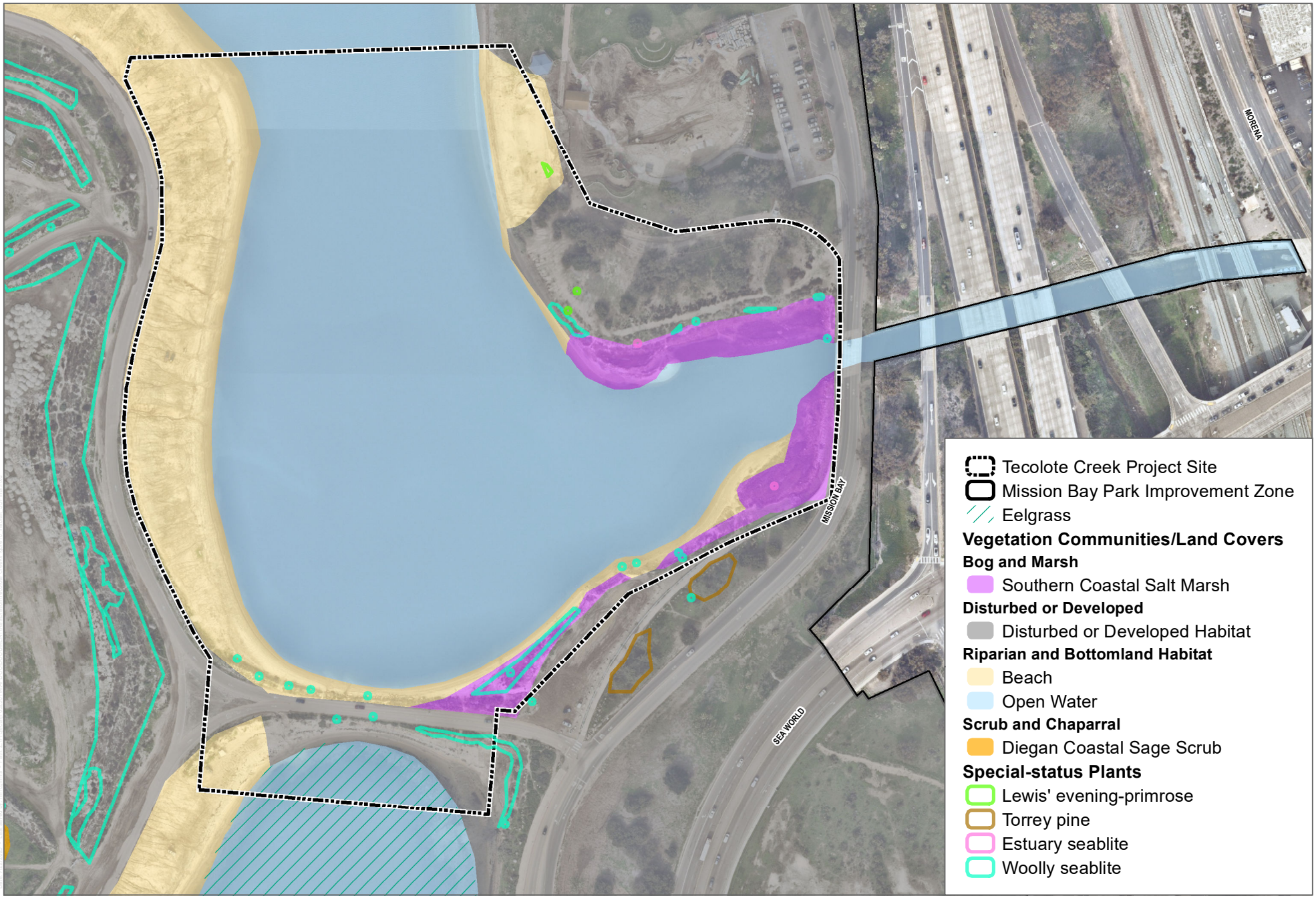

SOURCE: SANGIS 2023; City of San Diego 2018

DUDEK

0 110 220 Feet

FIGURE 10

Existing Habitats and Special-Status Plants

Tecolote Creek Wetlands Restoration Project Conceptual Habitat Restoration and Monitoring Plan

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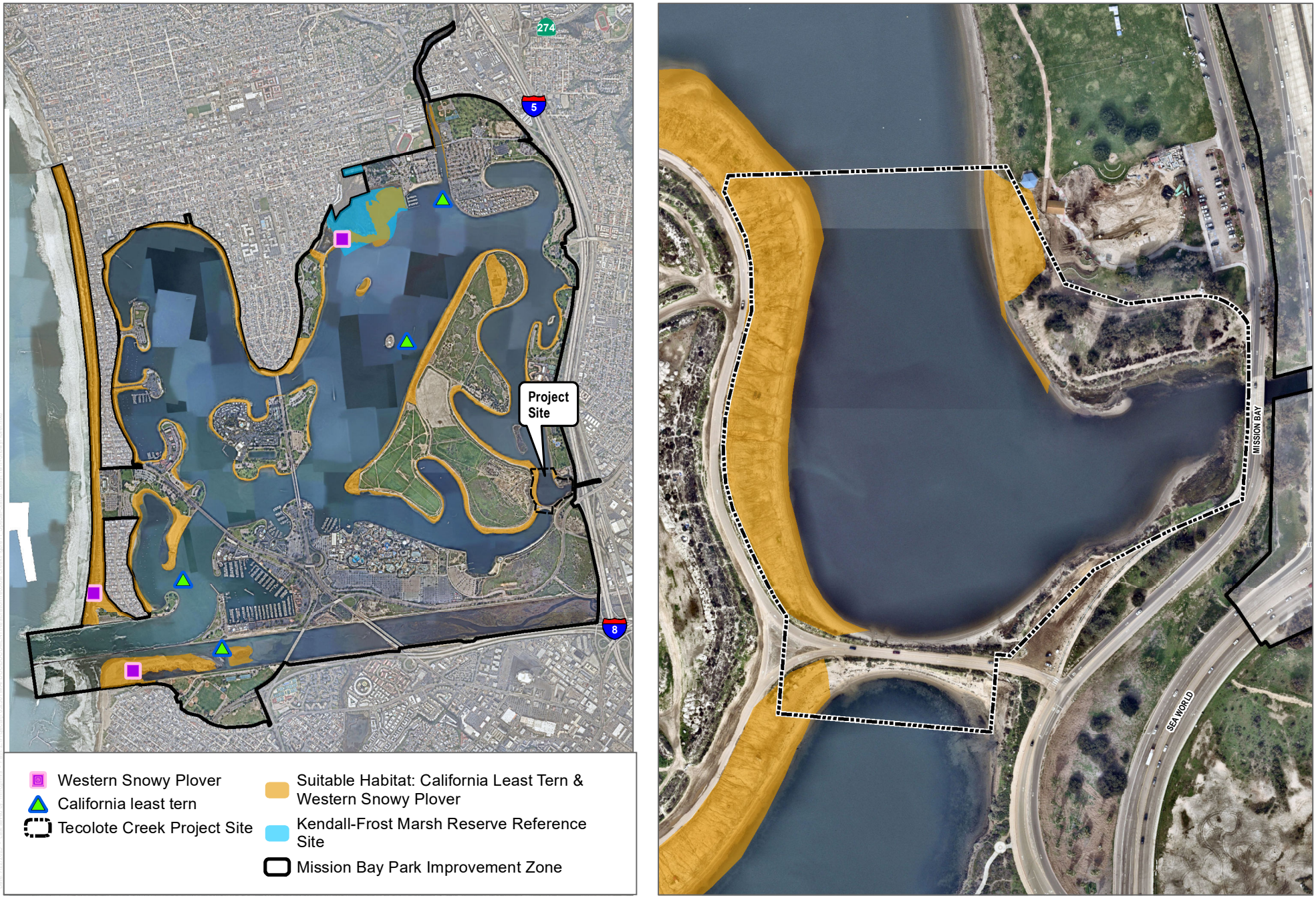

SOURCE: SANGIS 2023; City of San Diego 2018

DUDEK

0 150 300 Feet

FIGURE 11

Special-Status Wildlife Species - CA Least Tern and Western Snowy Plover

Tecolote Creek Wetlands Restoration Project Conceptual Habitat Restoration and Monitoring Plan

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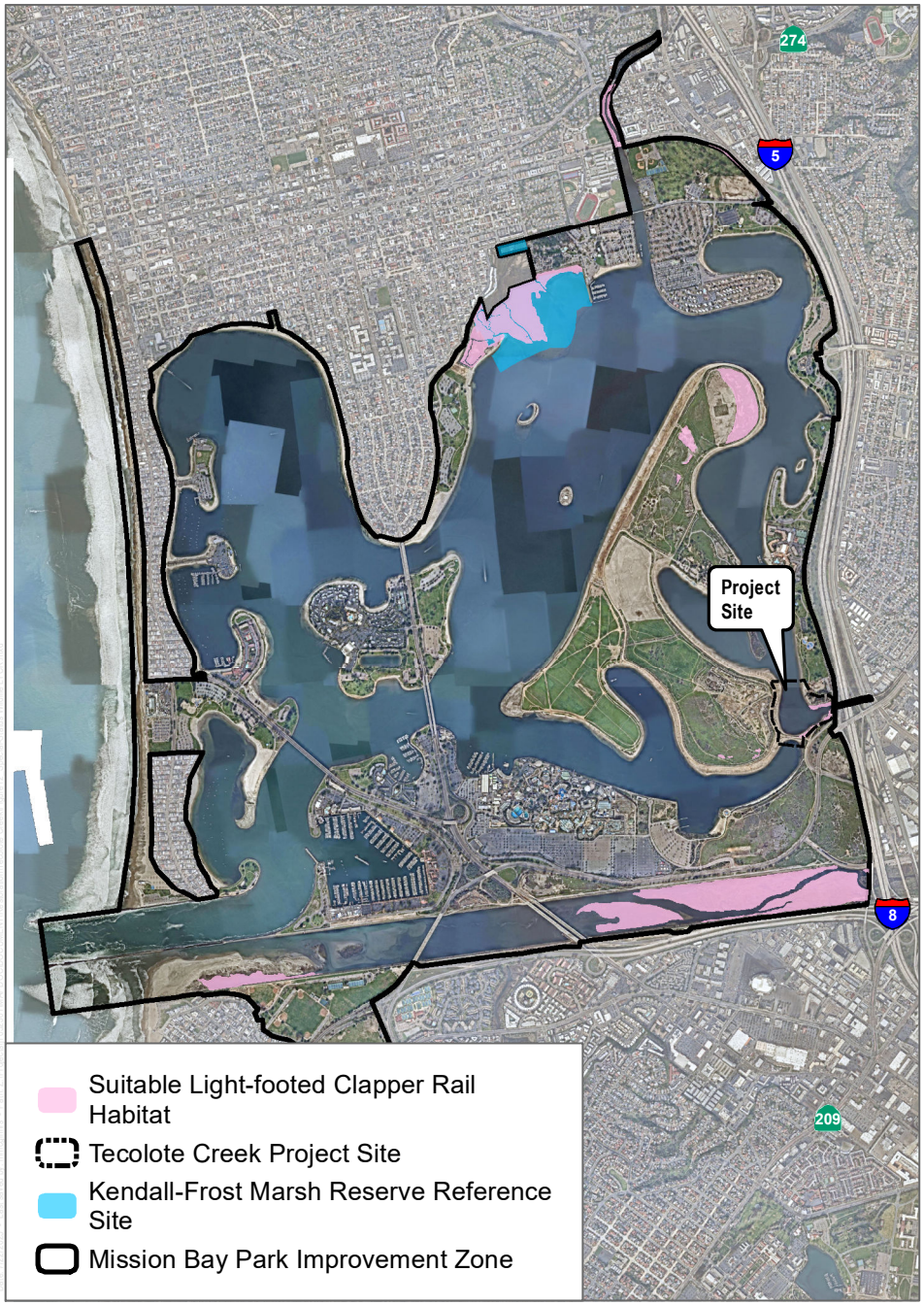

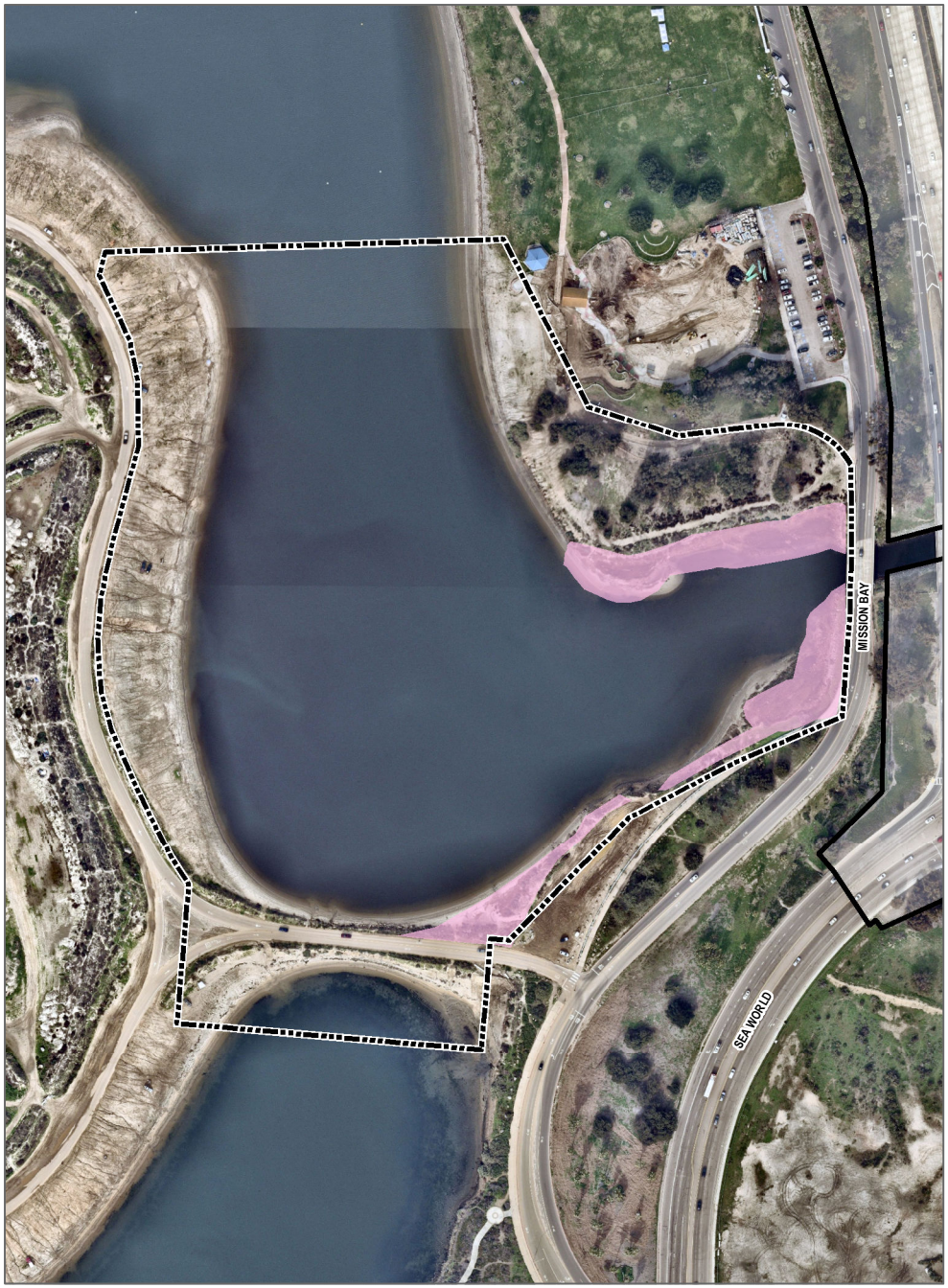

SOURCE: SANGIS 2023; City of San Diego 2018

DUDEK

0 150 300 Feet

FIGURE 12

Special-Status Species - Light-footed Clapper Rail Suitable Habitat

Tecolote Creek Wetlands Restoration Project Conceptual Habitat Restoration and Monitoring Plan

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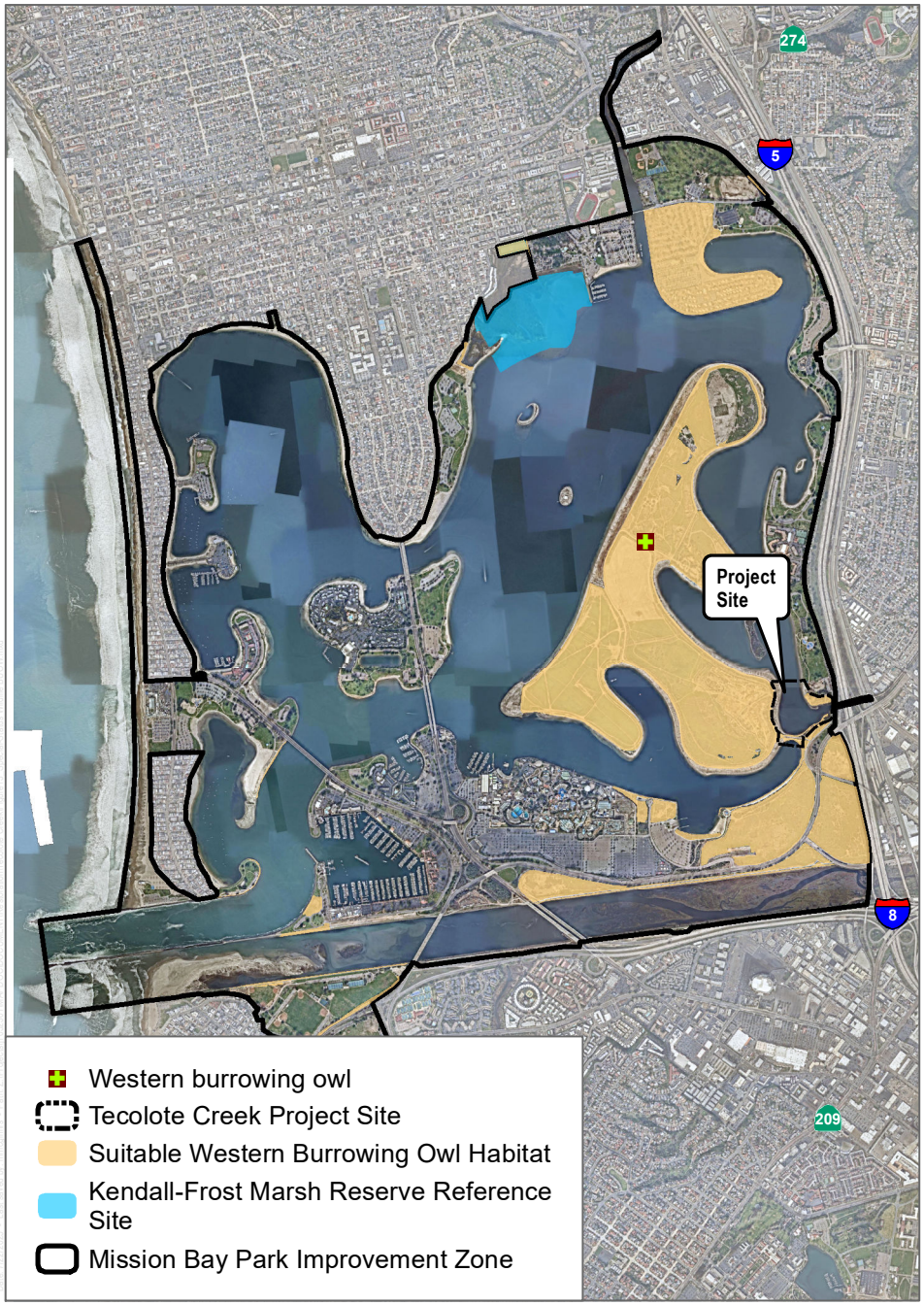

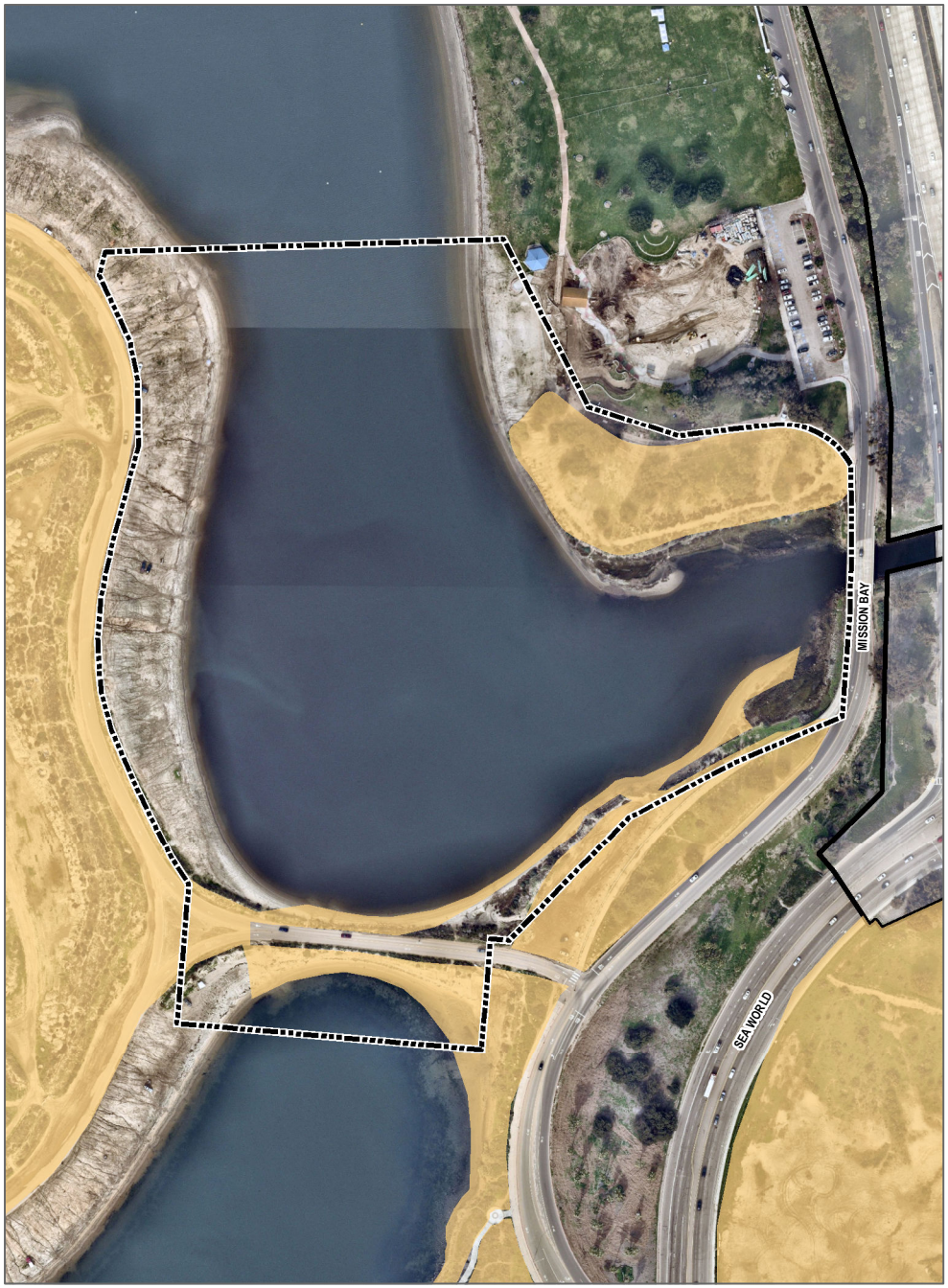

SOURCE: SANGIS 2023; City of San Diego 2018

DUDEK

0 150 300 Feet

FIGURE 13

Special-Status Wildlife Species - Western Burrowing Owl

Tecolote Creek Wetlands Restoration Project Conceptual Habitat Restoration and Monitoring Plan

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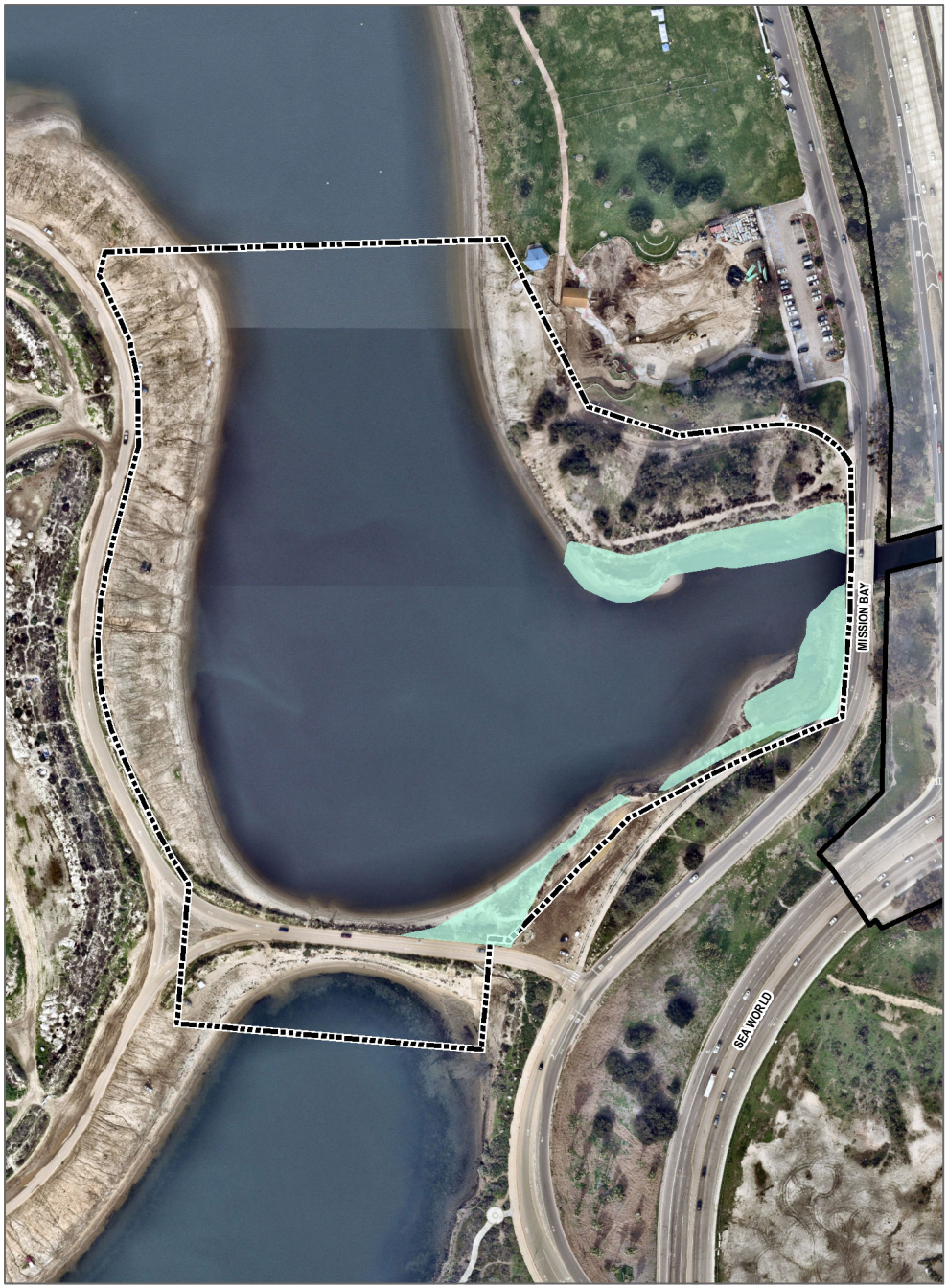

SOURCE: SANGIS 2023; City of San Diego 2018

DUDEK

0 150 300 Feet

FIGURE 14

Special-Status Wildlife Species - Belding's Savannah Sparrow

Tecolote Creek Wetlands Restoration Project Conceptual Habitat Restoration and Monitoring Plan

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SOURCE: SANGIS 2023; City of San Diego 2018

DUDEK

0 150 300 Feet

FIGURE 15

Reference Site

Tecolote Creek Wetlands Restoration Project Conceptual Habitat Restoration and Monitoring Plan

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APPENDIX A

Preliminary Set of Construction Drawings

MISSION BAY PROGRAM EIR
TECOLOTE CREEK WETLAND RESTORATION

CONTRACTOR'S RESPONSIBILITIES

1. PURSUANT TO SECTION 4216 OF THE CALIFORNIA GOVERNMENT CODE, AT LEAST 2 WORKING DAYS PRIOR TO EXCAVATION, YOU MUST CONTACT THE REGIONAL NOTIFICATION CENTER (E.G., UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA) AND OBTAIN AN INQUIRY IDENTIFICATION NUMBER.
2. NOTIFY SDG&E AT LEAST 10 WORKING DAYS PRIOR TO EXCAVATING WITHIN 10' OF SDG&E UNDERGROUND HIGH VOLTAGE TRANSMISSION POWER LINES (I.E., 69 KV & HIGHER).

MONUMENTATION / SURVEY NOTES

THE CONTRACTOR SHALL BE RESPONSIBLE FOR SURVEY MONUMENTS AND/OR VERTICAL CONTROL BENCHMARKS WHICH ARE DISTURBED OR DESTROYED BY CONSTRUCTION. A LICENSED LAND SURVEYOR OR LICENSED CIVIL ENGINEER AUTHORIZED TO PRACTICE LAND SURVEYING IN THE STATE OF CALIFORNIA SHALL FIELD LOCATE, REFERENCE, AND/OR PRESERVE ALL HISTORICAL OR CONTROLLING MONUMENTS PRIOR TO ANY EARTHWORK, DEMOLITION, OR SURFACE IMPROVEMENTS. IF DESTROYED, A LICENSED LAND SURVEYOR SHALL REPLACE SUCH MONUMENT(S) WITH APPROPRIATE MONUMENT(S). WHEN SETTING SURVEY MONUMENTS USED FOR RE-ESTABLISHMENT OF THE DISTURBED CONTROLLING SURVEY MONUMENTS AS REQUIRED BY SECTIONS 6730.2 AND 8771 OF THE BUSINESS AND PROFESSIONS CODE OF THE STATE OF CALIFORNIA. A CORNER RECORD OR RECORD OF SURVEY, AS APPROPRIATE, SHALL BE FILED WITH THE COUNTY SURVEYOR. IF ANY VERTICAL CONTROL IS TO BE DISTURBED OR DESTROYED, THE CITY OF SAN DIEGO FIELD SURVEY SECTION SHALL BE NOTIFIED IN WRITING AT LEAST 7 DAYS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPLACING ANY VERTICAL CONTROL BENCHMARKS DESTROYED BY THE CONSTRUCTION.

ABBREVIATIONS

CY	CUBIC YARD
EL, ELEV	ELEVATION
EX, EXIST	EXISTING
FG	FINISH GRADE
FT	FEET
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
SD	STORM DRAIN
TYP	TYPICAL
IE	INVERT ELEVATION
MIN	MINIMUM
PROP	PROPOSED
MIN	MINIMUM

DISCIPLINE CODE

G	GENERAL
D	DEMOLITION
C	CIVIL

SHEET INDEX

INDEX #	SHEET #	DRAWING NAME
1	G-1	COVER SHEET
2	C-1	GRADING - PLAN
3	C-2	PROFILES
4	C-3	PROFILES
5	C-4	PROFILES

PROJECT TEAM

DUDEK: MATT VALERIO, SENIOR PLANNER
ANDREW TALBET, SENIOR PLANNER

MOFFATT & NICHOL: CHRIS WEBB, SUPERVISORY COSTAL SCIENTIST
CRAIG FRAMPTON, COASTAL SCIENTIST
KYLE LANDON, COASTAL SCIENTIST

LEGEND

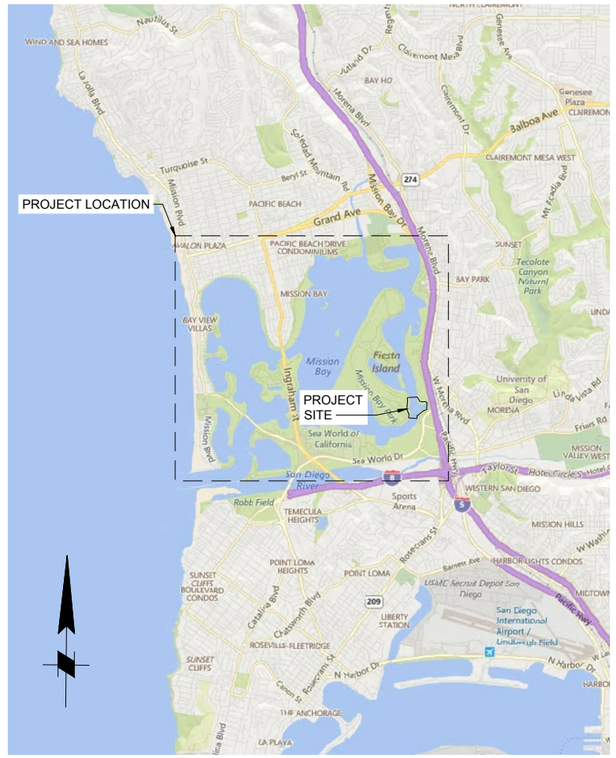
WETLAND ELEV RANGE (FEET, NGVD) FROM LOW ELEV TO HIGH ELEV. — HABITAT

-5.0 - -3.8	SUBTIDAL / EELGRASS
-3.8 - 1.2	MUDFLAT
1.2 - 2.0	LOW MARSH
2.0 - 3.8	MID MARSH
3.8 - 4.4	HIGH MARSH
4.4 - 6.4	TRANSITIONAL
6.4 - 16.0+	UPLAND

PROPOSED BRIDGE
PROJECT BOUNDARY
EXISTING CONTOUR
PROPOSED CONTOUR
TOP OF SLOPE
BOTTOM OF SLOPE
EXISTING CHAIN LINK FENCE
EXISTING FIRE PIT/MISCELLANEOUS
EXISTING POWER POLE
LIMITS OF CONSTRUCTION PHASING
EXISTING FIESTA ISLAND ROAD

LOCATION MAP

PROJECT LOCATION
NTS



VICINITY MAP
NTS

G-1

MISSION BAY PROGRAM EIR
TECOLOTE CREEK
WETLANDS RESTORATION
COVER SHEET

PRELIMINARY
NOT FOR CONSTRUCTION

CONSTRUCTION CHANGE / ADDENDUM			
CHANGE	DATE	AFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.

WARNING
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

The City of SAN DIEGO Public Works

moffatt & nichol
1660 HOTEL CIRCLE NORTH, SUITE 500
SAN DIEGO, CALIFORNIA 92108
PH (619) 220-6050 FAX (619) 220-6055

SPEC. NO.

CITY OF SAN DIEGO, CALIFORNIA
PUBLIC WORKS DEPARTMENT
SHEET 1 OF 5 SHEETS

WBS

APPROVED:
FOR CITY ENGINEER DATE
PRINT NAME RCE#

SUBMITTED BY:
PROJECT MANAGER

CHECKED BY:
PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	REC			

226-1701
CCS27 COORDINATE
1866-6261
CCS83 COORDINATE
XXXXX-02-D

CONTRACTOR
INSPECTOR
DATE STARTED
DATE COMPLETED

CONCEPT STUDY - 28 MAY 2019

FILE NAME: c:\53\10278 - Mission Bay PEIR\7 Design\CADD_Active_SheetSet (Mission Bay Program EIR-Wetlands)\G-1 - TECOLOTE CREEK - Cover Sheet.dwg
PLOTTED: Thursday, March 25, 2021 - 10:52am USER: cframpton

CONSTRUCTION PHASE SUMMARY

PHASE 1: FILL MISSION BAY TO CREATE MARSH AREAS. MAIN GRADING OPERATION.

PHASE 2: CONSTRUCT BRIDGE AND ASSOCIATED SUBTIDAL CONNECTION..

LEGEND

WETLAND ELEV RANGE (FEET, NGVD) FROM LOW ELEV TO HIGH ELEV	HABITAT
−6.0 – −3.7	SUBTIDAL / EELGRASS
−3.7 – 1.1	MUDFLAT
1.1 – 1.9	LOW MARSH
1.9 – 3.7	MID MARSH
3.7 – 4.8	HIGH MARSH
4.8 – 6.8	TRANSITIONAL
6.8 – 16.0+	UPLAND & DUNES

- PROJECT BOUNDARY
- (5) EXISTING BATHYMETRY
- 5 EXISTING CONTOUR
- 5 PROPOSED CONTOUR
- TOP OF SLOPE
- BOTTOM OF SLOPE
- FLOW DIRECTION
- PROPOSED BRIDGE
- PROPOSED FENCE
- POTENTIAL ROCK APRON AREA (FOR SCOUR PROTECTION) 3 FEET THICK
- PROPOSED BIKE/PEDESTRIAN PATH
- LIMITS OF CONSTRUCTION PHASES
- 2+00 STATION LINE

NOTES

1. ALL ELEVATIONS ARE IN REFERENCE TO NGVD 29 VERTICAL DATUM.
2. FOR ELEVATIONS OF THE ROCK APRON, SEE SECTION 5 ON SHEET C–4.

80' 40' 0 80' 160'

SCALE: 1"=80'

TECOLOTE CREEK

C–1

MISSION BAY PROGRAM EIR
TECOLOTE CREEK WETLANDS RESTORATION

TECOLOTE CREEK–PLAN

CITY OF SAN DIEGO, CALIFORNIA
PUBLIC WORKS DEPARTMENT
SHEET 2 OF 5 SHEETS

WBS

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PRINT NAME ____ RCE#

SUBMITTED BY: PROJECT MANAGER

CHECKED BY: PROJECT ENGINEER

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ORIGINAL	REC			

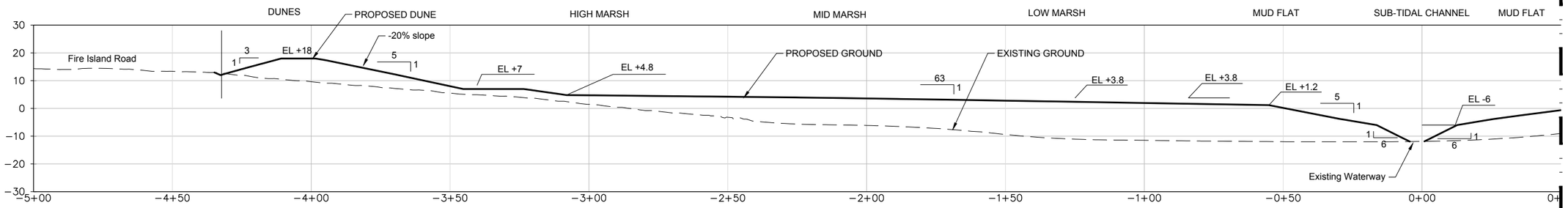
226–1701 CCS27 COORDINATE

1866–6261 CCS83 COORDINATE

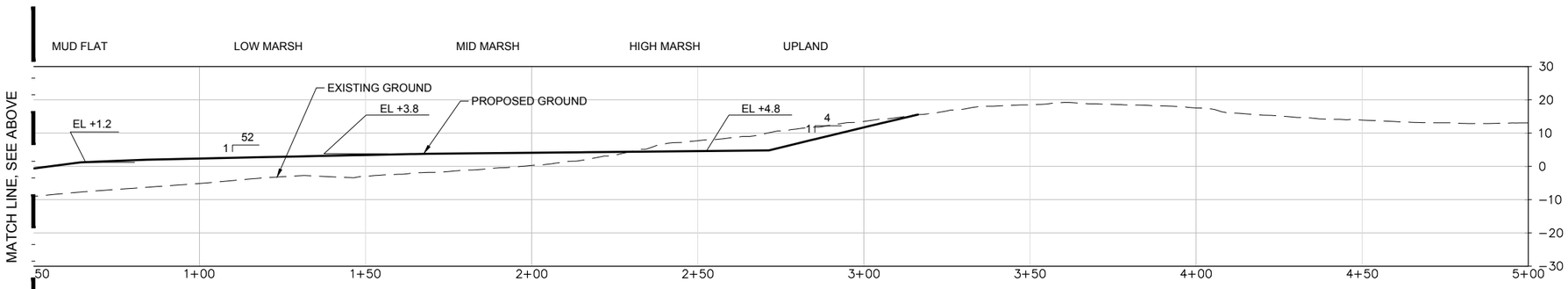
CONTRACTOR ____ DATE STARTED ____
INSPECTOR ____ DATE COMPLETED ____

XXXXX–02–D

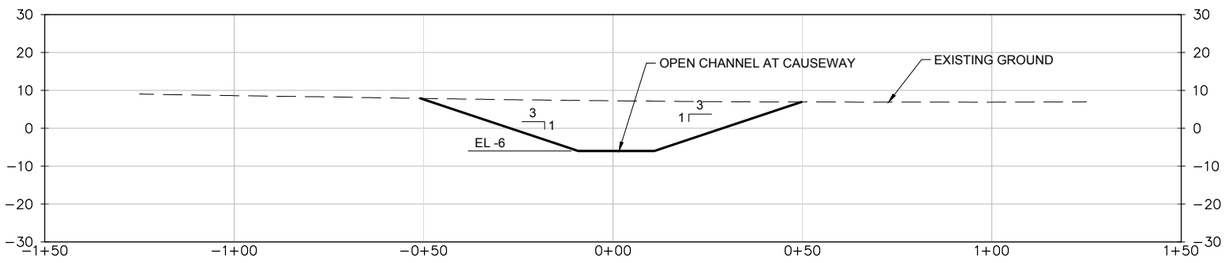
PRELIMINARY
NOT FOR CONSTRUCTION



1 C-1 SECTION
SCALE: 1"=20' H, 1"=20' V



1 C-1 SECTION
SCALE: 1"=20' H, 1"=20' V



2 C-1 SECTION
SCALE: 1"=20' H, 1"=20' V

NOTES

1. ALL ELEVATIONS ARE IN REFERENCE TO NGVD 29 VERTICAL DATUM.

LEGEND

EXISTING GROUND

PROPOSED GROUND

20 10 0 20 40
SCALE: 1"=20'

PRELIMINARY
NOT FOR CONSTRUCTION

TECOLOTE CREEK

C-2

MISSION BAY PROGRAM EIR
TECOLOTE CREEK
WETLANDS RESTORATION

TECOLOTE CREEK – SECTIONS

CITY OF SAN DIEGO, CALIFORNIA
PUBLIC WORKS DEPARTMENT
SHEET OF 5 SHEETS

WBS

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SUBMITTED BY:
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PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	REC			

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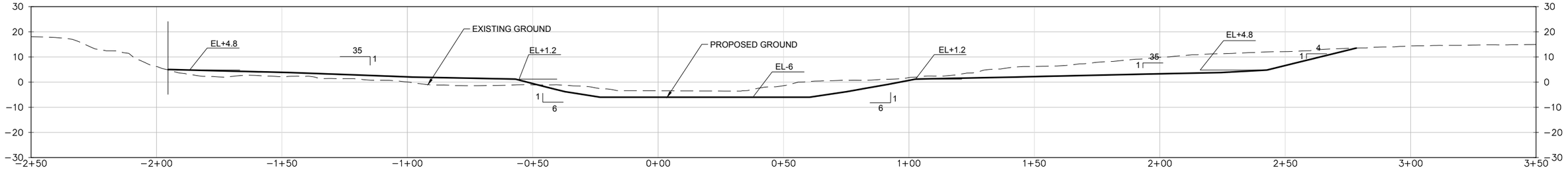
CCS27 COORDINATE
1866–6261
CCS83 COORDINATE

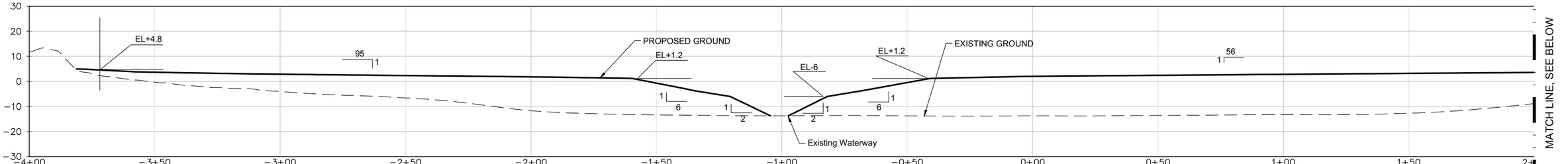
CONTRACTOR DATE STARTED
INSPECTOR DATE COMPLETED

XXXXX–02–D

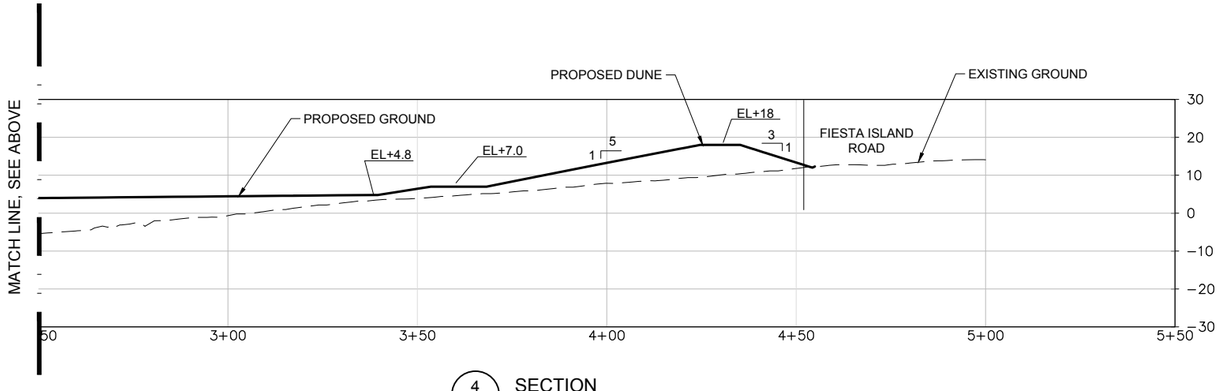
FILE NAME: Q:\SD\10278 – Mission Bay PERLV Design\CADD_Active_SheetSet (Mission Bay Program EIR–Wetlands)\C–2 – TECOLOTE CREEK – Sections.dwg
PLOTTED: Thursday, March 25, 2021 – 10:07am USER: cfrompton



3 C-1 **SECTION**
SCALE: 1"=20' H, 1"=20' V



4 C-1 **SECTION**
SCALE: 1"=20' H, 1"=20' V



4 C-1 **SECTION**
SCALE: 1"=20' H, 1"=20' V

NOTES

1. ALL ELEVATIONS ARE IN REFERENCE TO NGVD 29 VERTICAL DATUM.

LEGEND

EXISTING GROUND

PROPOSED GROUND

20 10 0 20 40
SCALE: 1"=20'

PRELIMINARY
NOT FOR CONSTRUCTION

C-3

MISSION BAY PROGRAM EIR
TECOLOTE CREEK WETLANDS RESTORATION

TECOLOTE CREEK – SECTIONS

CITY OF SAN DIEGO, CALIFORNIA
PUBLIC WORKS DEPARTMENT
SHEET OF 5 SHEETS

WBS

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226–1701
CCS27 COORDINATE

1866–6261
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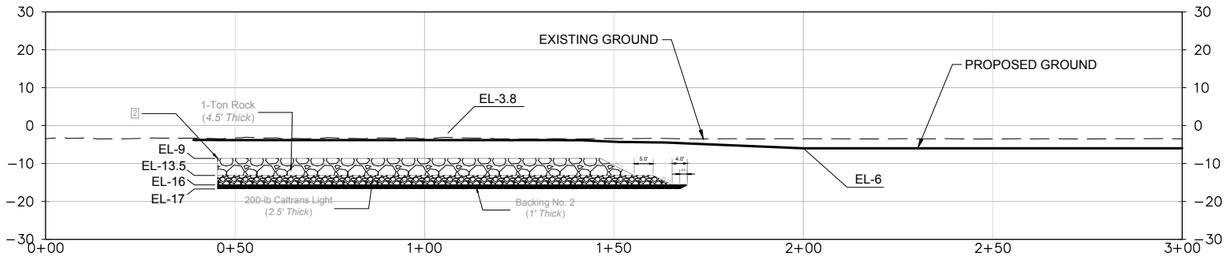
XXXXX–02–D

TECOLOTE CREEK



5 / C-1 SECTION
SCALE: 1"=20' H, 1"=20' V

NOTES

1. ALL ELEVATIONS ARE IN REFERENCE TO NGVD 29 VERTICAL DATUM
2. TIE INTO EXISTING RIPRAP

LEGEND

- EXISTING GROUND
- PROPOSED GROUND
- Top Layer: 1-Ton Rock
- Middle Layer: 200-lb Caltrans Light
- Bottom Layer: Backing No. 2

20 10 0 20 40
SCALE: 1"=20'

PRELIMINARY
NOT FOR CONSTRUCTION

C-4

MISSION BAY PROGRAM EIR
TECOLOTE CREEK
WETLANDS RESTORATION

TECOLOTE CREEK – SECTIONS

CITY OF SAN DIEGO, CALIFORNIA
PUBLIC WORKS DEPARTMENT
SHEET OF 5 SHEETS

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TECOLOTE CREEK

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PLOTTED: Thursday, March 25, 2021 - 10:07am USER: cfrompton